المراجعة رقم (1)

الترم الثانى

FINAL REVISION
2025 - SECOND TERM
PREP 2 - ALGEBRA

AHMED NASSR

Q1: CHOOSE THE CORRECT ANSWER

1) In Δ ABC, if AB = AC, m(∠B) = 50°, then m(∠A) = ... °.

ⓐ 50 ⓑ 60 ⓒ 70 ⓓ 80

2) If ABCD is a parallelogram whose area is 60 cm^2, E ∈ AD, F is the midpoint of BC, Then the area of Δ EBF = ... cm^2

ⓐ 15 ⓑ 30 ⓒ 20 ⓓ 120

3) Measure of exterior angle of an equilateral triangle = ... °.

ⓐ 60 ⓑ 90 ⓒ 120 ⓓ 180

4) If two polygons are similar and the ratio between the lengths of two corresponding sides is 2 : 3, then the ratio between their perimeters is ....

ⓐ 2 : 3 ⓑ 3 : 2 ⓒ 4 : 9 ⓓ 9 : 4

5) There are .... heights in isosceles triangle.

ⓐ 0 ⓑ 1 ⓒ 2 ⓓ 3

6) The area of the square = $\frac{1}{2}$ of the product of the lengths of its ....

ⓐ sides ⓑ diagonals ⓒ heights ⓓ medians

7) The lengths of two adjacent sides of a parallelogram are 8 cm. and 5 cm. and the smaller height is 4 cm, then its area equals .... cm^2.

ⓐ 17 ⓑ 32 ⓒ 20 ⓓ 52

8) If $\overline{AB} \perp \overleftrightarrow{BC}$, then the projection of AC on BC is ....

ⓐ $\overline{AB}$ ⓑ $\overline{BC}$ ⓒ $\overline{AC}$ ⓓ {A}

9) A rhombus whose diagonal lengths are 6 cm. and 11 cm, then its area is .... cm^2.

ⓐ 66 ⓑ 17 ⓒ 33 ⓓ 5

10) All .... are similar.

ⓐ triangles ⓑ squares

ⓒ rhombuses ⓓ rectangles

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11) The triangle whose base length is 12 cm. and its area is 48 cm^2, then the corresponding height is .... cm

ⓐ 3 ⓑ 4 ⓒ 6 ⓓ 8

12) If two polygons are similar, then the corresponding .... are equal in measure

ⓐ sides ⓑ angles ⓒ rays ⓓ vertices

13) The projection of a point on a straight line is ....

ⓐ a point ⓑ a line segment ⓒ a straight line ⓓ a ray

14) The sum of measures of the interior angles of a triangle equals .... °.

ⓐ 360 ⓑ 180 ⓒ 90 ⓓ 270

15) The lengths of the bases of trapezium is 6 cm and 10 cm, then the length of its middle base is .... cm.

ⓐ 16 ⓑ 15 ⓒ 9 ⓓ 8

16) ABC is a triangle in which m(∠A) = 90°, AD ⊥ BC, then $(AB)^2$ = ...

ⓐ AB × DC ⓑ CD × BD ⓒ BD × BC ⓓ CD × CB

17) In Δ ABC: $(AB)^2 = (BC)^2 + (AC)^2 - 3$, them m(∠C) .... 90°.

ⓐ > ⓑ < ⓒ = ⓓ ≤

18) If the area of a triangle is 24 cm^2, and its height is 8 cm. then its corresponding base length is .... cm.

ⓐ 16 ⓑ 6 ⓒ 3 ⓓ 2

19) If the ratio of enlargement between two similar polygons equals ...., then the two polygons are congruent.

ⓐ 1 ⓑ 2 ⓒ $\frac{1}{2}$ ⓓ $\frac{1}{4}$

The projection of point (2 , 4) on x-axis is ....

ⓐ (2 , 4) ⓑ (−2 , 4)

ⓒ (2 , 0) ⓓ (0 , 4)

21 The parallelogram and .... with common base and between two parallel straight lines are equal in area.

(a) polygon (b) triangle (c) rectangle (d) trapezium

22 If the length of rectangle is 12 cm. Its diagonal 13, then its area equals ....cm^2.

(a) 144 (b) 169 (c) 156 (d) 60

23 In Δ ABC: $(AB)^2 = (BC)^2 - (AC)^2$, then ∠C ....

(a) acute (b) straight (c) obtuse (d) right

24 The two polygons similar to a third polygon are ....

(a) congruent (b) similar (c) equal in area (d) coincide

25 The area of the square whose diagonal length is 6 cm. equals .... cm^2.

(a) 12 (b) 18 (c) 24 (d) 36

26 A rhombus is of area 60 cm^2 and the length of one of its diagonals equals 10 cm. then the length of the other diagonal equals .... cm.

(a) 4 (b) 8 (c) 10 (d) 12

27 Length of projection of line segment on straight line parallel to it .... length of line segment.

(a) > (b) < (c) = (d) ≤

28 The area of trapezium whose middle base is 7 cm, and its height is 6 cm equals .... cm^2.

(a) 21 (b) 40 (c) 42 (d) 13

29 The median of the triangle divides its surface into two triangles ....

(a) congruent. (b) equal in area
(c) similar (d) equal in perimeter

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30 In Δ ABC, if ∠A complements ∠B, then $(AB)^2$ .... $(BC)^2 + (AC)^2$

ⓐ > ⓑ < ⓒ = ⓓ ≤

31 If two polygons are similar and the ratio between the lengths of two corresponding sides is 1 : 3 and the perimeter of the smaller polygon is 12 cm. then the perimeter of the greater polygon is .... cm

ⓐ 12 ⓑ 24 ⓒ 36 ⓓ 48

32 The length of the projection of a given line segment .... the length of the original line segment.

ⓐ > ⓑ < ⓒ = ⓓ ≤

33 If ABCD ∼ XYZL, m(∠A) = 80°, m(∠Z) = 50°, m(∠D) = 120°, then m(∠B) = ... °.

ⓐ 90 ⓑ 110 ⓒ 130 ⓓ 250

34 The measure of each angle of the regular pentagon is ....°.

ⓐ 120 ⓑ 108 ⓒ 60 ⓓ 540

35 A square whose diagonal length is 12 cm, its area = ... cm^2.

ⓐ 72 ⓑ 48 ⓒ 144 ⓓ 24

36 The two triangle which are equal in area, drawn on one base and on the same side of it, their vertices lie on a line .... this base.

ⓐ parallel to ⓑ equal in area ⓒ intersecting ⓓ perpendicular to

37 In Δ ABC: $(AB)^2 = (BC)^2 + (AC)^2 + 5$, them m(∠C) .... 90°.

ⓐ > ⓑ < ⓒ = ⓓ ≤

38 A parallelogram whose area = 70 cm^2 and the length of one of its sides is 14 cm, then the length of the corresponding height equals .... cm

ⓐ 7 ⓑ 5

ⓒ 8 ⓓ 6

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39 The triangle whose side lengths are 5 cm, 12 cm. and 13 cm. then the measure of its greatest angle equals .... °.

ⓐ 85 ⓑ 90 ⓒ 120 ⓓ 100

40 The area of the rhombus whose diagonal lengths are 6cm, and 8cm, equals .... cm^2

ⓐ 3 ⓑ 24 ⓒ 16 ⓓ 12

41 The two triangle which are equal in area, drawn on one base and on the same side of it, their vertices lie on a line .... this base.

ⓐ perpendicular to ⓑ equal in area ⓒ intersecting ⓓ parallel to

42 If the projection of line segment on a straight line is a point, then the line segment .... on straight line.

ⓐ parallel ⓑ coincide ⓒ perpendicular ⓓ bisects

43 A parallelogram whose area = 50 cm^2 and the length of its base equals twice the corresponding height, then this height equals .... cm

ⓐ 50 ⓑ 25 ⓒ 10 ⓓ 5

44 The ratio between the area of the parallelogram and the area of the triangle whose base iscommon and are included between two parallel straight lines equals ....

ⓐ 1 : 2 ⓑ 1 : 3 ⓒ 2 : 1 ⓓ 2 : 3

45 The ratio between the lengths of two corresponding sides of two similar polygons is 3 : 5, then the ratio between their perimeters is ....

ⓐ 2 : 5 ⓑ 5 : 3 ⓒ 3 : 5 ⓓ 1 : 2

46 The rectangle whose dimensions are 6 cm. and 8 cm, then its diagonal length equals .... cm.

ⓐ 7 ⓑ 17 ⓒ 15 ⓓ 10

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47 If the drawing scale of two similar triangles 1 : 3 and measure of one of angles of smaller triangle is 40°, then the measure of corresponding angles in greater triangle equals ....°.

(a) 40 (b) 120 (c) 80 (d) 160

48 The triangle whose base length is 12 cm. and its area is 48 cm^2, then the corresponding height is ....

(a) 3 (b) 4 (c) 6 (d) 8

49 The triangle whose side lengths are 10 cm, 12 cm, 8 cm. is ....

(a) acute-angled (b) eright-angled (c) obtuse-angled (d) equilateral

50 If Δ ABC is an obtuse-angled triangle at A in which AB = 7 cm, AC = 8 cm. , then BC may be equal to .... cm.

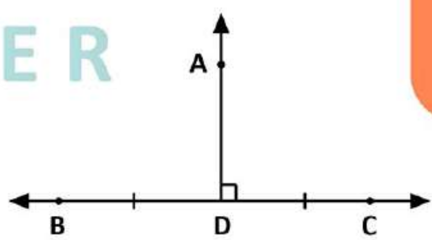
(a) 5 (b) 7 (c) 8 (d) 13

51 The area of a parallelogram is .... the area of a triangle if they have a common base lying on one of two parallel straight lines including them.

(a) half (b) equal to (c) twice (d) quarter

52 In the opposite figure:
The length of the projection of $\overline{AD}$ on $\overleftrightarrow{BC}$ is ....

(a) 0 (b) 1
(c) 2 (d) 3



اللهم اجعل هذا العمل خالصا لوجهك الكريم واكتب له القبول والنفع يا كريم يا وهّاب.

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Q2: COMPLETE THE FOLLOWING

1. In the right-angled triangle, the perpendicular drawn from the vertex of the right angle to the hypotenuse divides the triangle into two .... triangles.
2. The base angles of the isosceles trapezium are ....
3. The number of axes of symmetry of an isosceles triangle equals ....
4. The two triangles drawn on a common base and their vertices located on a straight line parallel to the base are ....
5. Two similar triangles, sides of first one are 4 cm, 6 cm and 8 cm, perimeter of other triangle is 72 cm, then the sides of the other are .... , ... , ...
6. If the perimeter of a rhombus is 20 cm. and height is 6 cm, then its area is ......
7. The area of parallelogram is ....
8. The two triangles drawn on a common base and their vertices located on a straight line parallel to the base are ....
9. If A $\in$ straight line L, then the projection of A on L is ....
10. If the area of a square equals 49 cm^2 and its perimeter = (7x – 14) cm. then x = ...
11. If two triangles drawn on same base are equal in area, then its vertices on straight line ....
12. In Δ ABC, if (AB – BC) (AB + BC) > $(AC)^2$, then the type of $\angle$ C is ....
13. The area of triangle = ...
14. The projection of the point (5 , –4) on the x-axis is the point ....
15. The median of a triangle divides its surface into two triangles .... in area

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16. The parallelogram .... line[s] of symmetry.

17. Trapezium whose area is 30 cm^2. and the length of its middle base is 6 cm. then its height is .... cm.

18. If the area of a triangle is 24 cm^2. and its height is 8 cm, then its corresponding base length is .... cm

19. The isosceles triangle has .... axes of symmetry.

20. A trapezium whose two parallel bases are of lengths 8 cm, 10 cm. and its height is 5 cm, then its area is .... cm^2.

21. The area of a triangle is equal to half of the area of a parallelogram if they have a common ....

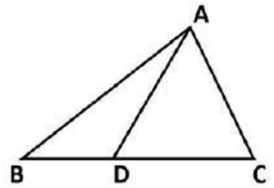
22. If two straight lines are intersecting, then each two vertically opposite angles are ....

23. The two triangles are similar if the corresponding are .... proportional.

24. If the ratio of enlargement of two similar polygons is equal to 1, then the two polygons are ....

25. The perimeter of a rhombus is 52 cm^2, the length of one of its diagonals is 24 cm then the length of the other diagonal is ....

26. In the opposite figure:
If the area of Δ ADB = $\frac{1}{2}$ the area of Δ ADC
Then BD = ... BC



27. Two parallel straight lines to third are ....

28. The diagonals of the isosceles trapezium are ....

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29) The right-angled triangle whose side length are 3 cm, 4 cm, 5 cm, its area = ... cm^2.

30) Surfaces of two parallelograms with common base and between two parallel straight lines, one is carrying this base, are ....

31) The angle of measure 70° supplements an angle of measure ....

32) ABCD is a parallelogram of area 100 cm^2. $E \in AD$. Then area of Δ EBC = ... cm^2

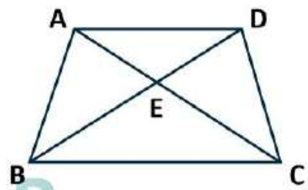
33) If we have two polygons, their corresponding angles are ....and their corresponding sides lengths are ...., then the two polygons are similar.

34) If $m(\angle ABC) = 70^\circ$, then m(reflex $\angle ABC$) = ... °..

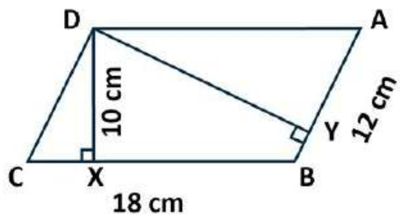
35) If $\Delta ABC \sim \Delta DEF$, $AB = \frac{1}{2} DE$, DF = 8 cm, Then AC = ...

Q3: ANSWER THE FOLLOWING

1) In the opposite figure:
The area of Δ AEB = the area of Δ DEC
Prove that : $\overline{AD} \parallel \overline{BC}$

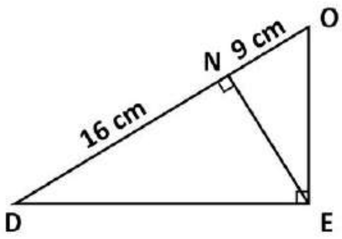


2) In the opposite figure:
ABCD is a parallelogram: AB = 12 cm.
BC = 18 cm, DX = 10 cm.
Find: 1] The area of parallelogram ABCD
2] The lenght of $\overline{DY}$



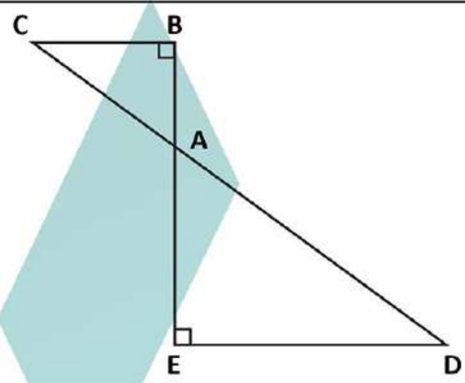
3) Find the height of a trapezium with area 450 cm^2, its two parallel base lengths are 24 cm. and 12 cm.

4 In the opposite figure:
DEO is a right-angled triangle at E
,EN ⊥ DO, DN = 16 cm.and ON = 9 cm.
Find : the lengths of $\overline{EN}$, $\overline{DE}$ and $\overline{EO}$



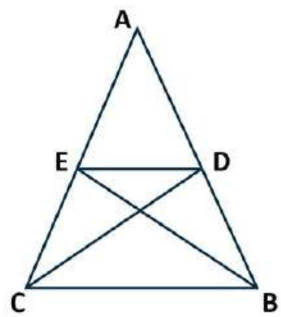
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5 In the opposite figure:
BE ∩ DC = {A} and
m(∠B) = m(∠E) = 90°.
Prove that :
Δ ABC ∽ Δ AED



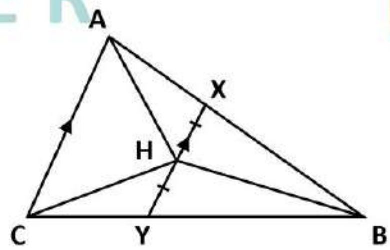
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6 In the opposite figure:
The area of Δ ABE = the area of Δ ACD
Prove that : $\overline{DE}$ // $\overline{BC}$



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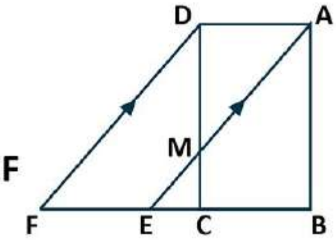
7 In the opposite figure:
$\overline{XY}$ // $\overline{AC}$, H is the midpoint of XY
Prove that :
The area of Δ AHB = the area of Δ CHB



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8 Show the type of the triangle ABC according to the measures of its angels, where AB = 7 cm, BC = 8 cm. and AC = 9 cm.

9 In the opposite figure:
ABCD is a rectangle, $\overline{AE} \parallel \overline{DF}$, $E \in \overrightarrow{BC}$ and $F \in \overrightarrow{BC}$
Prove that :
The area of the figure ABCM = the area of the figure DMEF

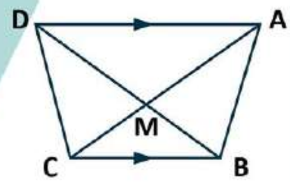


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10 A rhombus, the ratio between the lengths of its two diagonals is 5 : 8, if its area = 2000 cm^2, Find the length of each of its diagonals.

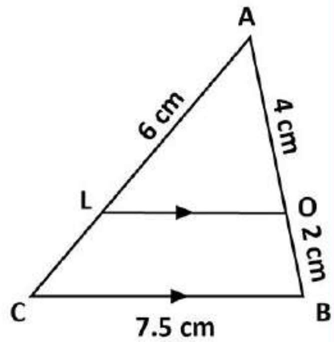
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11 In the opposite figure :
AD // BC
Prove that:
The area of Δ AMB = the area of Δ DMC



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12 In the opposite figure:
ABC is a triangle, $\overline{BC} \parallel \overline{OL}$
, AO = 4 cm, BO = 2 cm, AL = 6cm, BC = 7.5 cm.
Prove that: Δ ABC is similar to Δ AOL
Find : The lengths of $\overline{LC}$ and $\overline{OL}$

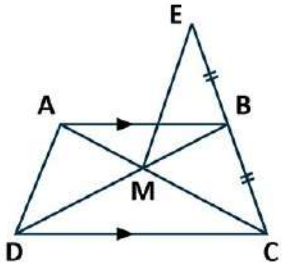


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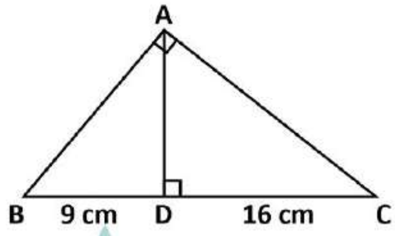
13 A trapezium its area is 48 cm^2, and its height is 6 cm. Find the length of its middle base, and if the length of one of its two bases is 7 cm.
Find the length of the other base.

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14 In the opposite figure:
ABCD is a quadrilateral where
$\overline{AB} \parallel \overline{CD}$ and EB = BC, Prove that:
The area of Δ EBM = The area of Δ ADM

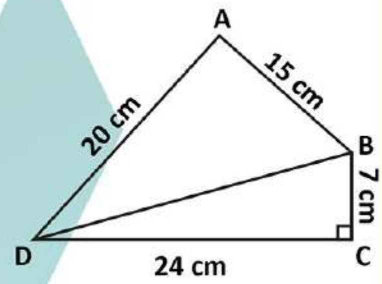


15 In the opposite figure:
ABC is a triangle, m (∠BAC) = 90°.
,AD ⊥ BC, BD = 9 cm.
,DC = 16 cm.
Find: AD, AB, AC



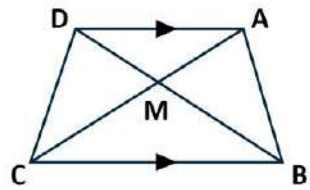
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16 In the opposite figure:
m(∠C) = 90°. AB = 15 cm.
, BC = 7 cm, CD = 24 cm, AD = 20 cm.
Prove that : m(∠A) = 90°.



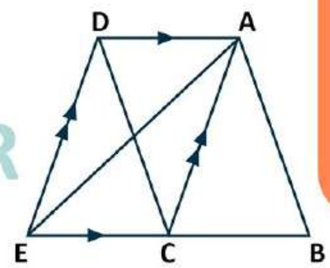
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17 In the opposite figure :
If AD // BC
Prove that :
the area of Δ AMB = the area of Δ DMC



---

18 In the opposite figure :
$\overline{AC}$ // $\overline{DE}$, $\overline{AD}$ // $\overline{EB}$, C is the midpoinr of BE
Prove that :
The area of the shape ABCD = the area of Δ ABE



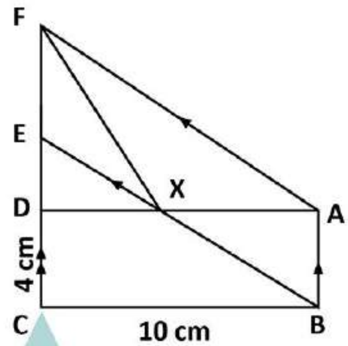
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19 The area of a trapezium is 180 cm², and its height is 12 cm. Find the lengths of its parallel bases if the ratio between their lengths is 3 : 2

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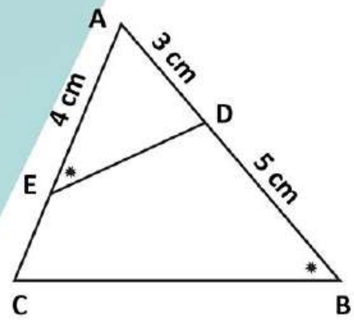
20 Determine the type of the Δ ABC according to its angles if AB = 6 cm, AC = 12 cm. ,BC = 8 cm.

21 In the opposite figure:
ABCD is a rectangle, ABEF is a parallelogram
, D ∈ CF, E ∈ CF, X ∈ BE
, AB = 4 cm, BC = 10 cm
Find:
1] Area of ABEF
2] Area of Δ XAF



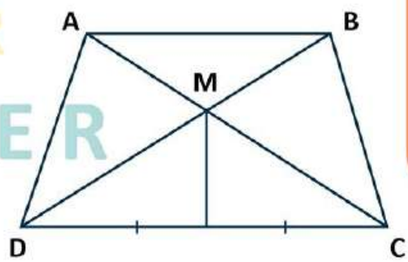
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22 In the opposite figure:
m(∠AED) = m(∠B)
, AD = 3 cm, DB = 5 cm, AE = 4 cm
Prove that:
1] Δ AED ∽ Δ ABC
2] Find the length of EC



---

23 In the opposite figure:
ABCD is a quadrilateral in which:
AC ∩ BD = {M}, E is the midpoint of DC
, The area of Δ MBC = the area of Δ MAD
Prove that:
The area of figure ADEM = the area of the figure BCEM



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Q1: CHOOSE THE CORRECT ANSWER

1 In Δ ABC, if AB = AC, m(∠B) = 50°, then m(∠A) = ... °.

(a) 50 (b) 60 (c) 70 (d) 80

2 If ABCD is a parallelogram whose area is 60 cm^2 , E ∈ AD, F is the midpoint of BC , Then the area of Δ EBF = ... cm^2

(a) 15 (b) 30 (c) 20 (d) 120

3 Measure of exterior angle of an equilateral triangle = ... °.

(a) 60 (b) 90 (c) 120 (d) 180

4 If two polygons are similar and the ratio between the lengths of two corresponding sides is 2 : 3, then the ratio between their perimeters is ....

(a) 2 : 3 (b) 3 : 2 (c) 4 : 9 (d) 9 : 4

5 There are .... heights in isosceles triangle.

(a) 0 (b) 1 (c) 2 (d) 3

6 The area of the square = $\frac{1}{2}$ of the product of the lengths of its ....

(a) sides (b) diagonals (c) heights (d) medians

7 The lengths of two adjacent sides of a parallelogram are 8 cm. and 5 cm. and the smaller height is 4 cm, then its area equals .... cm^2.

(a) 17 (b) 32 (c) 20 (d) 52

8 If $\overline{AB} \perp \overleftrightarrow{BC}$, then the projection of AC on BC is ....

(a) $\overline{AB}$ (b) $\overline{BC}$ (c) $\overline{AC}$ (d) {A}

9 A rhombus whose diagonal lengths are 6 cm. and 11 cm, then its area is .... cm^2.

(a) 66 (b) 17 (c) 33 (d) 5

10 All .... are similar.

(a) triangles (b) squares

(c) rhombuses (d) rectangles

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11 The triangle whose base length is 12 cm. and its area is 48 cm^2, then the corresponding height is .... cm

ⓐ 3 ⓑ 4 ⓒ 6 ⓓ 8

12 If two polygons are similar, then the corresponding .... are equal in measure

ⓐ sides ⓑ angles ⓒ rays ⓓ vertices

13 The projection of a point on a straight line is ....

ⓐ a point ⓑ a line segment ⓒ a straight line ⓓ a ray

14 The sum of measures of the interior angles of a triangle equals .... °.

ⓐ 360 ⓑ 180 ⓒ 90 ⓓ 270

15 The lengths of the bases of trapezium is 6 cm and 10 cm, then the length of its middle base is .... cm.

ⓐ 16 ⓑ 15 ⓒ 9 ⓓ 8

16 ABC is a triangle in which $m(\angle A) = 90^\circ$, $AD \perp BC$, then $(AB)^2 =$ ....

ⓐ AB × DC ⓑ CD × BD ⓒ BD × BC ⓓ CD × CB

17 In Δ ABC: $(AB)^2 = (BC)^2 + (AC)^2 - 3$, them $m(\angle C)$ .... 90°.

ⓐ > ⓑ < ⓒ = ⓓ ≤

18 If the area of a triangle is 24 cm^2, and its height is 8 cm. then its corresponding base length is .... cm.

ⓐ 16 ⓑ 6 ⓒ 3 ⓓ 2

19 If the ratio of enlargement between two similar polygons equals ...., then the two polygons are congruent.

ⓐ 1 ⓑ 2 ⓒ $\frac{1}{2}$ ⓓ $\frac{1}{4}$

The projection of point (2 , 4) on x-axis is ....

ⓐ (2 , 4) ⓑ (−2 , 4)

ⓒ (2 , 0) ⓓ (0 , 4)

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21 The parallelogram and .... with common base and between two parallel straight lines are equal in area.

(a) polygon (b) triangle (c) rectangle (d) trapezium

22 If the length of rectangle is 12 cm. Its diagonal 13, then its area equals ....cm^2.

(a) 144 (b) 169 (c) 156 (d) 60

23 In Δ ABC: $(AB)^2 = (BC)^2 - (AC)^2$, then ∠C ....

(a) acute (b) straight (c) obtuse (d) right

24 The two polygons similar to a third polygon are ....

(a) congruent (b) similar (c) equal in area (d) coincide

25 The area of the square whose diagonal length is 6 cm. equals .... cm^2.

(a) 12 (b) 18 (c) 24 (d) 36

26 A rhombus is of area 60 cm^2 and the length of one of its diagonals equals 10 cm. then the length of the other diagonal equals .... cm.

(a) 4 (b) 8 (c) 10 (d) 12

27 Length of projection of line segment on straight line parallel to it .... length of line segment.

(a) > (b) < (c) = (d) ≤

28 The area of trapezium whose middle base is 7 cm, and its height is 6 cm equals .... cm^2.

(a) 21 (b) 40 (c) 42 (d) 13

29 The median of the triangle divides its surface into two triangles ....

(a) congruent. (b) equal in area

(c) similar (d) equal in perimeter

FOLLOW US

30) In Δ ABC, if ∠A complements ∠B, then $(AB)^2$ .... $(BC)^2 + (AC)^2$

(a) > (b) < (c) = (d) ≤

31) If two polygons are similar and the ratio between the lengths of two corresponding sides is 1 : 3 and the perimeter of the smaller polygon is 12 cm. then the perimeter of the greater polygon is .... cm

(a) 12 (b) 24 (c) 36 (d) 48

32) The length of the projection of a given line segment .... the length of the original line segment.

(a) > (b) < (c) = (d) ≤

33) If ABCD ∼ XYZL, m(∠A) = 80°, m(∠Z) = 50°, m(∠D) = 120°, then m(∠B) = ... °.

(a) 90 (b) 110 (c) 130 (d) 250

34) The measure of each angle of the regular pentagon is ....°.

(a) 120 (b) 108 (c) 60 (d) 540

35) A square whose diagonal length is 12 cm, its area = ... cm^2.

(a) 72 (b) 48 (c) 144 (d) 24

36) The two triangle which are equal in area, drawn on one base and on the same side of it, their vertices lie on a line .... this base.

(a) parallel to (b) equal in area (c) intersecting (d) perpendicular to

37) In Δ ABC: $(AB)^2 = (BC)^2 + (AC)^2 + 5$, them m(∠C) .... 90°.

(a) > (b) < (c) = (d) ≤

38) A parallelogram whose area = 70 cm^2 and the length of one of its sides is 14 cm, then the length of the corresponding height equals .... cm

(a) 7 (b) 5
(c) 8 (d) 6

39 The triangle whose side lengths are 5 cm, 12 cm. and 13 cm. then the measure of its greatest angle equals .... °.

(a) 85 (b) 90 (c) 120 (d) 100

40 The area of the rhombus whose diagonal lengths are 6cm, and 8cm, equals .... cm^2

(a) 3 (b) 24 (c) 16 (d) 12

41 The two triangle which are equal in area, drawn on one base and on the same side of it, their vertices lie on a line .... this base.

(a) perpendicular to (b) equal in area (c) intersecting (d) parallel to

42 If the projection of line segment on a straight line is a point, then the line segment .... on straight line.

(a) parallel (b) coincide (c) perpendicular (d) bisects

43 A parallelogram whose area = 50 cm^2 and the length of its base equals twice the corresponding height, then this height equals .... cm

(a) 50 (b) 25 (c) 10 (d) 5

44 The ratio between the area of the parallelogram and the area of the triangle whose base iscommon and are included between two parallel straight lines equals ....

(a) 1 : 2 (b) 1 : 3 (c) 2 : 1 (d) 2 : 3

45 The ratio between the lengths of two corresponding sides of two similar polygons is 3 : 5, then the ratio between their perimeters is ....

(a) 2 : 5 (b) 5 : 3 (c) 3 : 5 (d) 1 : 2

46 The rectangle whose dimensions are 6 cm. and 8 cm, then its diagonal length equals .... cm.

(a) 7 (b) 17
(c) 15 (d) 10

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47 If the drawing scale of two similar triangles 1 : 3 and measure of one of angles of smaller triangle is 40°, then the measure of corresponding angles in greater triangle equals ....°.

ⓐ 40 ⓑ 120 ⓒ 80 ⓓ 160

48 The triangle whose base length is 12 cm. and its area is 48 cm², then the corresponding height is ....

ⓐ 3 ⓑ 4 ⓒ 6 ⓓ 8

49 The triangle whose side lengths are 10 cm, 12 cm, 8 cm. is ....

ⓐ acute-angled ⓑ eright-angled ⓒ obtuse-angled ⓓ equilateral

50 If Δ ABC is an obtuse-angled triangle at A in which AB = 7 cm, AC = 8 cm. , then BC may be equal to .... cm.

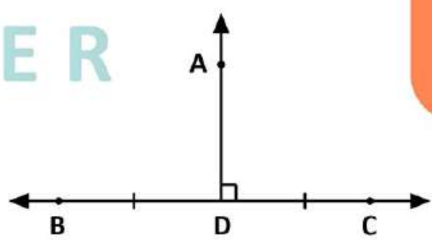
ⓐ 5 ⓑ 7 ⓒ 8 ⓓ 13

51 The area of a parallelogram is .... the area of a triangle if they have a common base lying on one of two parallel straight lines including them.

ⓐ half ⓑ equal to ⓒ twice ⓓ quarter

52 In the opposite figure:
The length of the projection of $\overline{AD}$ on $\overleftrightarrow{BC}$ is ....

ⓐ 0 ⓑ 1
ⓒ 2 ⓓ 3



اللهم اجعل هذا العمل خالصا لوجهك الكريم واكتب له القبول
والنفع يا كريم يا وهّاب.

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Q2: COMPLETE THE FOLLOWING

1. In the right-angled triangle, the perpendicular drawn from the vertex of the right angle to the hypotenuse divides the triangle into two ...similar... triangles.
2. The base angles of the isosceles trapezium are ...equal in measure...
3. The number of axes of symmetry of an isosceles triangle equals ...1...
4. The two triangles drawn on a common base and their vertices located on a straight line parallel to the base are ...equal in area...
5. Two similar triangles, sides of first one are 4 cm, 6 cm and 8 cm, perimeter of other triangle is 72 cm, then the sides of the other are ...16... , ...24... , ...32...
6. If the perimeter of a rhombus is 20 cm. and height is 6 cm, then its area is ...30...
7. The area of parallelogram is ...b x h...
8. The two triangles drawn on a common base and their vertices located on a straight line parallel to the base are ...equal in area...
9. If A $\in$ straight line L, then the projection of A on L is ...(itself) or (point A)... .
10. If the area of a square equals 49 cm^2 and its perimeter = (7x – 14) cm. then x = ...6...
11. If two triangles drawn on same base are equal in area, then its vertices on straight line ...parallel to base... .
12. In Δ ABC, if (AB – BC) (AB + BC) > $(AC)^2$, then the type of ∠ C is ...obtuse... .
13. The area of triangle = ...$\frac{1}{2}$ b x h... .
14. The projection of the point (5 , –4) on the x-axis is the point ...(5 , 0)...
15. The median of a triangle divides its surface into two triangles ...equal... in area

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16) The parallelogram ...0.... line[s] of symmetry.

17) Trapezium whose area is 30 cm^2. and the length of its middle base is 6 cm. then its height is ....5...... cm.

18) If the area of a triangle is 24 cm^2. and its height is 8 cm, then its corresponding base length is ..6.......... cm

19) The isosceles triangle has ....1...... axes of symmetry.

20) A trapezium whose two parallel bases are of lengths 8 cm, 10 cm. and its height is 5 cm, then its area is .....45......... cm^2.

21) The area of a triangle is equal to half of the area of a parallelogram if they have a common base and included between two parallel straight lines

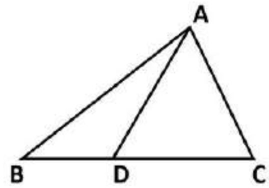
22) If two straight lines are intersecting, then each two vertically opposite angles are equal in measure

23) The two triangles are similar if the corresponding are sides proportional.

24) If the ratio of enlargement of two similar polygons is equal to 1, then the two polygons are congruent

25) The perimeter of a rhombus is 52 cm^2, the length of one of its diagonals is 24 cm then the length of the other diagonal is ....10.......... .

26) In the opposite figure:
If the area of Δ ADB = $\frac{1}{2}$ the area of Δ ADC
Then BD = ..$\frac{1}{3}$.... BC



27) Two parallel straight lines to third are parallel .

28) The diagonals of the isosceles trapezium are equal in length .

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29 The right-angled triangle whose side length are 3 cm, 4 cm, 5 cm, its area = ...6....... cm^2.

30 Surfaces of two parallelograms with common base and between two parallel straight lines, one is carrying this base, are ..equal in area...

31 The angle of measure 70° supplements an angle of measure .....110...

32 ABCD is a parallelogram of area 100 cm^2. E $\in$ AD. Then area of Δ EBC = ...50... cm^2

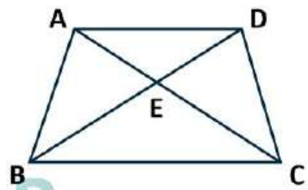
33 If we have two polygons, their corresponding angles are ..equal in measure..and their corresponding sides lengths are ..Proportional.., then the two polygons are similar.

34 If m(∠ABC) = 70°, then m(reflex ∠ ABC) = ..290.. °..

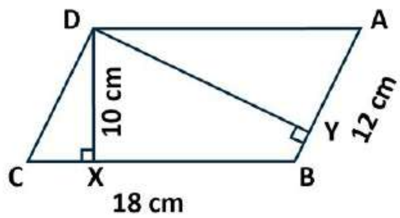
35 If Δ ABC ∽ Δ DEF, AB = $\frac{1}{2}$ DE, DF = 8 cm, Then AC = ...4..... .

Q3: ANSWER THE FOLLOWING

1 In the opposite figure:
The area of Δ AEB = the area of Δ DEC
Prove that : $\overline{AD}$ // $\overline{BC}$



2 In the opposite figure:
ABCD is a parallelogram: AB = 12 cm.
BC = 18 cm, DX = 10 cm.
Find: 1] The area of parallelogram ABCD
2] The lenght of $\overline{DY}$



3 Find the height of a trapezium with area 450 cm^2, its two parallel base lengths are 24 cm. and 12 cm.

FOLLOW US

Date: __________ no: __________

prep 2

1] ∵ A of △ AMB = A of △ DMC

by adding A of △ BMC to both sides.

∴ The area of △ ABC = A of △ DBC

and They have { BC Common base and on one Side of it

∴ $\overline{AD} // \overline{BC}$ ###

2] ∵ ABCD is a parallelogram.

∴ A of ▱ ABCD = CB × DX
= 18 × 10 = 180 cm^2.

∵ DY is a height of parallelogram ABCD.

∴ $DY = \frac{180}{12} = 15$ cm ###

3] Middle base = $\frac{24 + 12}{2} = 18$ cm.

∴ height = $\frac{\text{Area}}{\text{Middle base}} = \frac{450}{18} = 25$ cm

###

4] In ΔEDO

$\because m(\angle E) = 90^\circ$, $EN \perp DO$

$\therefore (EN)^2 = ON \times DN$
$= 9 \times 16 = 144$
$\therefore EN = \sqrt{144} = 12\,cm.$

$\therefore (DE)^2 = DN \times DO$
$= 16 \times 25 = 400$
$\therefore DE = \sqrt{400} = 20\,cm.$

$\therefore (EO)^2 = ON \times OD$
$= 9 \times 25 = 225$
$\therefore EO = \sqrt{225} = 15\,cm.$ #

5] $\because BE \cap DC = \{A\}$

$\therefore m(\angle EAD) = m(\angle BAC)$ (V.O.A)

in $\Delta\Delta$ DAE, CAB

$\begin{cases} m(\angle B) = m(\angle D) = 90^\circ \\ m(\angle EAD) = m(\angle BAC) \\ \therefore m(\angle D) = m(\angle C) \end{cases}$

$\therefore \Delta ABC \sim \Delta AED.$

6] $\because$ A of Δ ABE = A of Δ ACD

Subtracting The area of Δ ADE from both Sides.

$\therefore$ A of Δ BDE = A of Δ CDE

and They have common base $\overline{DE}$ and on one side of it.

$\therefore \overline{DE} \parallel \overline{BC}$ #

7] $\because \overline{BH}$ is a median in Δ BXY

$\therefore$ A of Δ BXH = A of Δ BYH $\longrightarrow (1)$

$\because$ XH = YH , $\overline{XY} \parallel \overline{AC}$

$\therefore$ A of Δ AXH = A of Δ CYH $\longrightarrow (1)$

by adding (1) and (2)

$\therefore$ The area of Δ AHB = The area of Δ CHB. #

8] $\because$ AB = 7 cm , BC = 8 cm , AC = 9 cm

$\therefore (AB)^2 = (7)^2 = 49$

$\therefore (BC)^2 = (8)^2 = 64$

$\therefore (AC)^2 = (9)^2 = 81$

$\because (AC)^2 < (AB)^2 + (BC)^2$

$\therefore \Delta ABC$ is acute angled triangle.

Date: ________ no: ________

[9] ∵ ABCD is a rectangle.

∴ $\overline{AD} \parallel \overline{BC}$, $\overline{AD} \parallel \overline{EF}$

∵ $\overline{AE} \parallel \overline{DF}$

∴ AEFD is a parallelogram.

in ▭ ABCD , ▱ AEFD

{ have $\overline{AD}$ common base.

{ $\overleftrightarrow{AD} \parallel \overline{BE}$

∴ A of ▭ ABCD = A of ▱ AEFD

by subtracting A of △ AMD from both sides.

∴ A of Figure ABCM = A of Figure DMEF

#

[10] Let The length of two diagonals 5X , 8X

∴ $\frac{1}{2} \times 5X \times 8X = 200$

∴ $20X^2 = 2000$ ∴ $X^2 = 100$

∴ $X = \sqrt{100} = 10$ cm.

So, The two diagonals are : 50 cm , 80 cm.

#

11 ∵ ΔΔ ABC, DBC

{ have common base $\overline{BC}$

{ included between two lines: $\overline{AD} // \overline{BC}$

∴ A of Δ ABC = The area of Δ DBC
by subtracting area of Δ BMC from both

∴ The area of Δ AMB = A of Δ DMC.

#

12 ∵ $\overline{LO} // \overline{CB}$

∴ m(∠B) = m(∠AOL) corresponding → (1)

∴ m(∠C) = m(∠OLA) corresponding → (2)

in ΔΔ ABC, AOL

{ m(∠C) = m(∠OLA)
{ m(∠B) = m(∠AOL)
{ ∠A is common

∴ ΔABC ~ to Δ AOL

$$\therefore \frac{AB}{AO} = \frac{BC}{OL} = \frac{AC}{AL}$$

$$\frac{6}{4} = \frac{AC}{6} \quad \therefore AC = \frac{6 \times 6}{4} = 9 \text{ cm.}$$

∴ LC = 9 cm − 6 cm = 3 cm.

$$\therefore \frac{6}{4} = \frac{7.5}{OL} \quad OL = \frac{4 \times 7.5}{6} = 5 \text{ cm}$$

#

[13] middle base $= \frac{\text{Area}}{\text{height}} = \frac{48}{6} = 8$ cm

$\because b_1 = 7 \quad b_2 = ?$

middle base $= \frac{7 + b_2}{2}$

$2 \times 8 = 7 + b_2 \quad \therefore b_2 = 9$ cm

#

[14] in $\triangle\triangle$ BCD, ADC

They have common base $\overline{DC}$

included between two parallel side AB, DC

$\therefore$ A of $\triangle$ BCD = A of $\triangle$ ADC

by subtracting A of $\triangle$ DMC from both sides

$\therefore$ A of $\triangle$ AMD = A of BMC $\rightarrow$ (1)

In $\triangle$ MEC

$\because$ B is a midpoint of EC

$\therefore$ MB is a median

$\therefore$ A of $\triangle$ CMB = A of $\triangle$ EBM $\rightarrow$ (2)

From (1) and (2)

$\therefore$ A of $\triangle$ EBM = A of $\triangle$ ADM

#

15 In ΔABC

$\because m(\angle A) = 90^\circ$, $\overline{AD} \perp \overline{BC}$

$\therefore (AD)^2 = BD \times DC$

$= 9 \times 16 = 144$ $\therefore AD = \sqrt{144} = 12 cm$

$\therefore (AB)^2 = AD \times BC = 9 \times 25 = 225$

$\therefore AB = \sqrt{225} = 15 cm.$

$(AC)^2 = DC \times BC = 16 \times 25 = 400$

$\therefore AC = \sqrt{400} = 20 cm.$ #

16 In ΔBCD

$\because m(\angle C) = 90^\circ$

$\therefore (BD)^2 = (BC)^2 + (DC)^2$

$= 49 + 576 = 625$

$\therefore BD = \sqrt{625} = 25 cm.$

In ΔABD

$(AB)^2 = (15)^2 = 225$

$(AD)^2 = (20)^2 = 400$

$(BD)^2 = (25)^2 = 625$

$\because (BD)^2 = (AB)^2 + (AD)^2$

$\therefore \Delta ABD$ is right angled triangle at A

$\therefore m(\angle A) = 90^\circ.$

18 ∵ $\triangle\triangle$ ACD , ACE

have common base AC

included between two parallel lines $\overline{AC}, \overline{DE}$

∴ A of $\triangle$ ACD = A of $\triangle$ ACE

by adding A of $\triangle$ ABC

∴ A of The shape ABCD = A of $\triangle$ ABE

\#

19 let The lengths of trapezium's side 3X , 2X

∴ middle base = $\frac{3X+2X}{2} = \frac{5X}{2}$

∴ Area = middle base x height

$180 = \frac{5X}{2} \times 12$ (6)

∴ 5X = 30 X = 6 cm

The base of trapezium are = 12 , 18

20 in $\triangle$ ABC

$(AB)^2 = (6)^2 = 36$

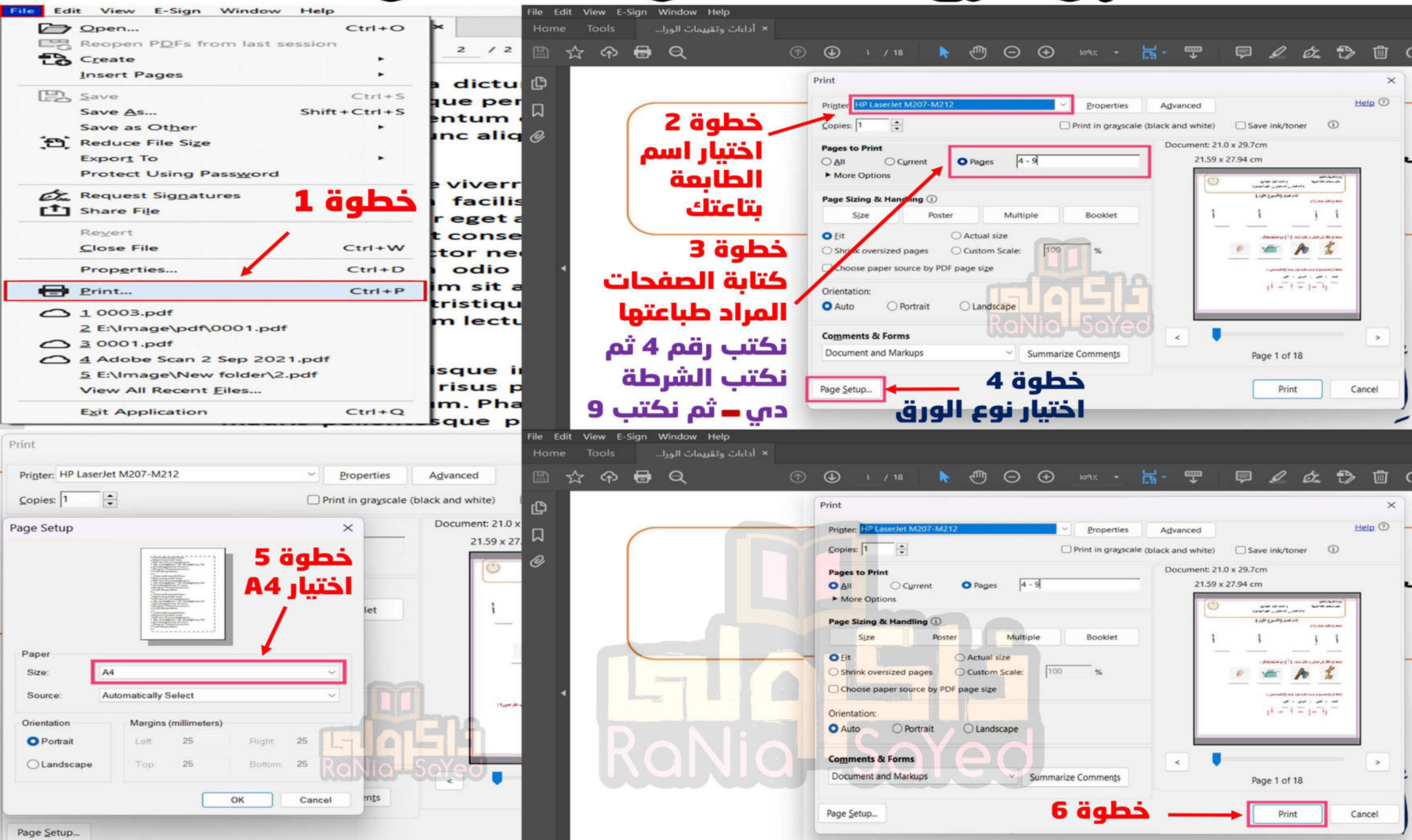
$(AC)^2 = (12)^2 = 144$

$(BC)^2 = (8)^2 = 64$

∵ $(AC)^2 > (AB)^2 + (BC)^2$ ∴ $\triangle$ ABC is obtuse-angled at B

كيفية طباعة صفحات معينة من ملف معين

مثلا ازاى نطبع الصفحات من صفحة 4 الى صفحة 9



المراجعة رقم (2)

الترم الثانى

بِسْمِ اللَّهِ الرَّ

Question (1) Choose the correct answer.

1) The area of rectangle = …………..

A) L × w B) L + w C) [L + w] × 2 D) $\frac{1}{2}$ × [L × w]

2) The area of parallelogram = …………..

A) b × h B) b + h C) [b + h] × 2 D) $\frac{1}{2}$ × [b × h]

3) In parallelogram the smaller height corresponding to ………… Base.

A) smaller B) greater C) equal

4) In parallelogram the greater height corresponding to ………… Base.

A) smaller B) greater C) equal

5) If the base length of the parallelogram is 10 cm and its corresponding height is 7 cm then its area = ………….. cm^2

A) 17 B) 34 C) 35 D) 70

6) If the base length of the parallelogram is 12 cm and its corresponding height is 5 cm then its area = ………….. cm^2

A) 17 B) 30 C) 34 D) 60

7) If the base lengths of the parallelogram is 10 cm and 8 cm and its greater height is 7 cm then its area = ………….. cm^2

A) 28 B) 35 C) 56 D) 70

8) If the base lengths of the parallelogram is 10 cm and 8 cm and its smaller height is 7 cm then its area = ………….. cm^2

A) 28 B) 35 C) 56 D) 70

9) If the base lengths of the parallelogram is 10 cm and 8 cm and its greater height is 5 cm then its smaller height = ………….. cm

A) 3 B) 3.5 C) 4 D) 4.5

10) If the base lengths of the parallelogram is 6 cm and 9 cm and its smaller height is 4 cm then its greater height = ………….. cm

A) 4 B) 5 C) 6 D) 7

11) A parallelogram with area 27 cm^2 and its base = 3 × its corresponding height then its base = ………….. cm

A) 3 B) 6 C) 9 D) 12

12) A parallelogram with area 32 cm^2 and its base = 2 × its corresponding height then its base = ………….. cm

A) 4 B) 6 C) 8 D) 12

13) Surface of parallelogram ……………. Another surface of parallelogram have a common base and between two parallel lines.

A) > B) < C) =

14) Surface of parallelogram ……………. Another surface of triangle have a common base and between two parallel lines.

A) > B) < C) =

15) The area of triangle = …………..

A) b × h B) b + h C) [b + h] × 2 D) $\frac{1}{2}$ × [b × h]

16) If the base length of the triangle is 10 cm and its corresponding height is 7 cm then its area = ………….. cm^2

A) 17 B) 34 C) 35 D) 70

17) If the base length of the triangle is 5 cm and its corresponding height is 8 cm then its area = …………. cm^2

A) 10 B) 20 C) 30 D) 40

18) A triangle with area 27 cm^2 and its base = 6 cm then its height = …………. cm

A) 3 B) 6 C) 9 D) 12

19) A triangle with area 24 cm^2 and its height = 8 cm then its base = …………. cm

A) 3 B) 6 C) 9 D) 12

20) A triangle with area 6 cm^2 and its base = 3 × its corresponding height then its base = …………. cm

A) 3 B) 6 C) 9 D) 12

21) A triangle with area 16 cm^2 and its base = 2 × its corresponding height then its height = …………. cm

A) 2 B) 4 C) 6 D) 8

22) The point of intersection of the heights in the acute angled triangle is ……………… the triangle

A) at the right angle B) Inside C) outside

23) The point of intersection of the heights in the obtuse angled triangle is ……………… the triangle

A) at the right angle B) Inside C) outside

24) The point of intersection of the heights in the right angled triangle is ……………… the triangle

A) at the right angle B) Inside C) outside

25) The point of intersection of the heights in the equilateral triangle is ……………… the triangle.

A) at the right angle B) Inside C) outside

26) If ABC is a triangle and AD is a median, Then area of triangle ABC = ………….. area of triangle ABD.

A) 0 B) 1 C) 2 D) 3

27) If ABC is a triangle and AD is a median, Then area triangle of ACD = ………….. area triangle of ABD.

A) 0 B) 1 C) 2 D) 3

28) If ABC is a triangle and AD is a median, Then area triangle of ACD = ………….. area triangle of ABC.

A) 0 B) $\frac{1}{2}$ C) $\frac{1}{3}$ D) $\frac{1}{4}$

29) ………………. is a parallelogram whose sides are equal in length.

A) Rectangle B) Trapezoid C) Rhombus D) Square

30) ………………. is a quadrilateral which has only one pair of parallel sides.

A) Rectangle B) Trapezoid C) Rhombus D) Square

31) A rhombus with side 6 cm and its height 8 cm, Then its area = ……………. cm^2

A) 14 B) 24 C) 28 D) 48

32) A rhombus with side 5 cm and its height 4 cm, Then its area = ……………. cm^2

A) 10 B) 15 C) 18 D) 20

33) A rhombus with perimeter 28 cm and its height 5 cm, Then its area = ……………. cm^2

A) 12 B) 18 C) 24 D) 35

34) A rhombus with area 60 cm^2 and its height 12 cm, Then its side length = ……………. cm

A) 5 B) 6 C) 12 D) 72

35) A rhombus with area 72 cm^2 and its side length 9 cm, Then its height = ……………. cm

A) 8 B) 9 C) 16 D) 72

36) A rhombus with diagonal lengths 9 cm and 6 cm, Then its area = ……………. cm^2

A) 18 B) 27 C) 30 D) 54

37) A rhombus with diagonal lengths 12 cm and 10 cm, Then its area = ……………. cm^2

A) 22 B) 36 C) 44 D) 60

38) A rhombus with diagonal lengths 8 cm and 10 cm, Then its area = ……………. cm^2

A) 18 B) 36 C) 40 D) 80

39) A rhombus with area 12 cm^2 and its diagonal length is 4, Then it's other diagonal length = ……………. cm

A) 4 B) 6 C) 8 D) 9

40) A rhombus with area 64 cm^2 and its diagonal length is 16, Then it's other diagonal length = ……………. cm

A) 4 B) 6 C) 8 D) 9

41) A trapezoid with parallel sides lengths 12 cm and 8 cm and its height is 6 cm, Then its area = ……………. cm^2

A) 26 B) 48 C) 60 D) 120

42) A trapezoid with parallel sides lengths 6 cm and 8 cm and its height is 7 cm, Then its area = ……………. cm^2

A) 21 B) 49 C) 90 D) 104

43) A trapezoid with parallel sides lengths 5 cm and 7 cm and its height is 9 cm, Then its area = ……………. cm^2

A) 21 B) 54 C) 90 D) 98

44) A trapezoid with area 64 and its parallel sides lengths are 10 cm and 6 cm, Then its height = ……………. cm

A) 8 B) 10 C) 12 D) 16

45) A trapezoid with area 84 and its parallel sides lengths are 10 cm and 14 cm, Then its height = ……………. cm

A) 7 B) 9 C) 11 D) 12

46) A trapezoid with area 84 and its parallel sides lengths are 10 cm and 14 cm, Then its height = ……………. cm

A) 7 B) 9 C) 11 D) 12

47) A trapezoid with area 48 and one of its parallel sides length is 10 cm and its height is 4 cm, Then its other parallel side = ……………. cm

A) 8 B) 10 C) 12 D) 14

48) A trapezoid with middle base length 6 cm and its height is 7 cm, Then its area = ……………….. cm^2

A) 13 B) 21 C) 26 D) 42

49) A trapezoid with area 60 cm^2 and its middle base is 12 cm, Then its height = ……………….. cm

A) 5 B) 10 C) 12 D) 17

50) A trapezoid with area 54 cm^2 and its height is 6 cm, then its middle Base = ……………….. cm

A) 7 B) 8 C) 9 D) 10

51) The projection of a point on a given straight line is a ……………….

A) line segment B) line C) ray D) point

52) The projection of a line segment on a given straight line not perpendicular to it is a ……………….

A) line segment B) line C) ray D) point

53) The projection of a line segment on a given straight line perpendicular to it is a ……………….

A) line segment B) line C) ray D) point

54) The projection of a ray on a given straight line not perpendicular to it is a ……………….

A) line segment B) line C) ray D) point

55) The projection of a ray on a given straight line perpendicular to it is a ……………….

A) line segment B) line C) ray D) point

56) The length of projection of a line segment on a straight line …………… the length of a line segment itself.

A) = B) ≤ C) ≥ D) >

57) The length of projection of a line segment on a straight line perpendicular to it …………… the length of a line segment itself.

A) = B) ≤ C) ≥ D) >

58) The length of projection of a line segment on a straight line parallel to it …………… the length of a line segment itself.

A) = B) ≤ C) ≥ D) >

59) In triangle ABC If $(AB)^2 = (BC)^2 + (AC)^2$, Then ABC is a/an ……………. angled triangle.

A) acute　　B) right　　C) obtuse

60) In triangle ABC If $(AB)^2 < (BC)^2 + (AC)^2$, Then ABC is a/an ……………. angled triangle.

A) acute　　B) right　　C) obtuse

61) In triangle ABC If $(AB)^2 > (BC)^2 + (AC)^2$, Then ABC is a/an ……………. angled triangle.

A) acute　　B) right　　C) obtuse

62) The triangle which it's sides are 5 cm, 12 cm and 13 cm it's area = ………. cm^2

A) 30　　B) 32.5　　C) 60　　D) 65

63) The triangle which it's sides are 6 cm, 10 cm and 8 cm it's area = ………. cm^2

A) 24　　B) 30　　C) 50　　D) 60

64) ABC is an obtuse angled triangle whose two of it's sides are 5 cm and 3 cm, Then the third side is ……………. cm.

A) 4　　B) 5　　C) 7　　D) 8

65) ABC is an obtuse angled triangle whose two of it's sides are 4 cm and 7 cm, Then the third side is ……………. cm.

A) 4　　B) 5　　C) 7　　D) 8

66) ABC is an acute angled triangle whose two of it's sides are 3 cm and 3 cm, Then the third side is ……………. cm.

A) 4　　B) 5　　C) 7　　D) 8

67) ABC is an obtuse angled triangle whose two of it's sides are 6 cm and 7 cm, Then the third side is ……………. cm.

A) 1　　B) 10　　C) 13　　D) 14

68) In triangle ABC If $(AB)^2 = (BC)^2 + (AC)^2$ and m(A) = 60°, Then m(B) = …………°

A) 30 B) 45 C) 60 D) 90

69) In triangle ABC If $(AB)^2 = (BC)^2 + (AC)^2$ and m(A) = 45°, Then m(B) = …………°

A) 30 B) 45 C) 60 D) 90

70) In triangle ABC If $(AB)^2 = (BC)^2 + (AC)^2$ and m(A) = 45°, Then ABC is a/an …………………… Triangle.

A) equilateral B) isosceles C) scalene

71) ABC is an isosceles triangle whose two of it's sides are 4 cm and 3 cm, Then it's a/an ………………… angled triangle.

A) acute B) right C) obtuse

72) ABC is an isosceles triangle whose two of it's sides are 6 cm and 8 cm, Then it's a/an ………………… angled triangle.

A) acute B) right C) obtuse

73) In triangle ABC if angle a complements angle B, Then ABC is a/an ……………… angled triangle.

A) acute B) right C) obtuse

74) In triangle ABC if 90° < m(A) < 180°, Then ABC is a/an ……………… angled triangle.

A) acute B) right C) obtuse

75) In triangle ABC If $(AB)^2 = (BC)^2 + (AC)^2$, Then angle C is a/an ……………. angle.

A) acute B) right C) obtuse

76) In triangle ABC If $(AB)^2 = (BC)^2 + (AC)^2$, Then angle B is a/an ……………. angle.

A) acute B) right C) obtuse

77) In triangle ABC If $(AB)^2 < (BC)^2 + (AC)^2$, Then angle C is a/an ……………. angle.

A) acute B) right C) obtuse

78) In triangle ABC If $(AB)^2 > (BC)^2 + (AC)^2$, Then angle C is a/an ……………. angle.

A) acute B) right C) obtuse

79) In triangle ABC If $(AB)^2 < (BC)^2 - (AC)^2$, Then angle C is a/an ……………. angle.

A) acute B) right C) obtuse

80) In triangle ABC If $(AB)^2 > (BC)^2 - (AC)^2$, Then ABC is a/an ……………. angle.

A) acute B) right C) obtuse

81) In triangle ABC If $(AB)^2 + 3 = (BC)^2 + (AC)^2$, Then ABC is a/an ……………. angled triangle.

A) acute B) right C) obtuse

82) In triangle ABC If $(AB)^2 – 6 = (BC)^2 + (AC)^2$, Then ABC is a/an ……………. angled triangle.

A) acute B) right C) obtuse

83) In triangle ABC If $(AB)^2 – 1 = (BC)^2 + (AC)^2$, Then angle B is a/an ……………. angle.

A) acute B) right C) obtuse

84) In triangle ABC If $(AB)^2 + 2 = (BC)^2 + (AC)^2$, Then angle B is a/an ……………. angle.

A) acute B) right C) obtuse

85) ABC is a triangle whose two of it's sides are 6 cm and 7 cm, Then the third side is between 1 cm and …….. cm.

A) 1 B) 9 C) 13 D) 14

86) ABC is a triangle whose two of it's sides are 5 cm and 8 cm, Then the third side is between ………. cm and 13 cm.

A) 1   B) 9   C) 13   D) 14

87) In triangle ABC If $(AB)^2 < (BC - AC)(BC + AC)$, Then ABC is a/an …………….. angled triangle.

A) acute   B) right   C) obtuse

88) In triangle ABC If $(AB)^2 > (BC - AC)(BC + AC)$, Then angle C is a/an …………….. angle.

A) acute   B) right   C) obtuse

Question (2) Complete the Following.

1) Surfaces of 2 parallelogram with common base and between two parallel straight line are ……………..

2) Surfaces of 2 parallelogram and rectangle with common base and between two parallel straight line are ……………..

3) The area of rectangle = …………..

4) The area of parallelogram = …………..

5) Surfaces of 2 parallelogram with base equal in length and lying on a straight line and opposite side to it lying on another parallel straight line are……………….

6) If the base length of the parallelogram is 5 cm and its corresponding height is 6 cm then its area = ………….. cm^2

7) If the base length of the parallelogram is 12 cm and its corresponding height is 11 cm then its area = ………….. cm^2

8) If the base length of the parallelogram is 15 cm and its corresponding height is 5 cm then its area = ………….. cm^2

9) If the base lengths of the parallelogram is 5 cm and 7 cm and its greater height is 7 cm then its area = ... cm^2

10) If the base lengths of the parallelogram is 8 cm and 11 cm and its greater height is 9 cm then its area = ... cm^2

11) If the base lengths of the parallelogram is 10 cm and 8 cm and its smaller height is 5 cm then its area = ... cm^2

12) If the base lengths of the parallelogram is 5 cm and 7 cm and its smaller height is 5 cm then its greater height = ... cm

13) A parallelogram with area 48 cm^2 and its base = 3 × its corresponding height then its base = ... cm

14) A parallelogram with area 64 cm^2 and its base = 4 × its corresponding height then its base = ... cm

15) The area of triangle = ...

16) If the base length of the triangle is 7 cm and its corresponding height is 8 cm then its area = ... cm^2

17) If the base length of the triangle is 6 cm and its corresponding height is 7 cm then its area = ... cm^2

18) A triangle with area 84 cm^2 and its base = 12 cm then its height = ...cm

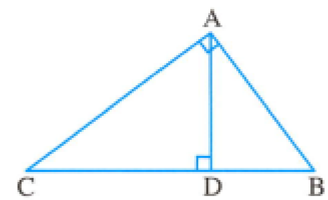
19) The ratio between the area of triangle and the area of parallelogram which have common base and between two parallel straight lines is ....

20) The ratio between the area of parallelogram and the area of parallelogram which have common base and between two parallel straight lines is ....

21) The area of right angled triangle which the lengths of the two sides of the right angle are 5 cm and 4 cm is ....

22) The length of two adjacent sides of the parallelogram is 10 cm and 8 cm and its greater height is 6 cm then its area = ...

23) If the base length of 2 triangle are equal and their corresponding heights length are equal, Then their areas are ………………



24) ABC is a right angled triangle and AD is perpendicular to

BC, Then …………….. × ……………. = …………….. × …………….

25) Two triangle which have a common base and their vertices on a straight line parallel to the base are ……………….

26) Triangles of bases equal in length and lying between two parallel lines are …………………

27) The median of triangle divides its surface into two triangles are ……………………….

28) Triangles which have congruent bases and have a common vertex are ………………………

29) If ABC is a triangle and D is the midpoint of BC, Then area of triangle ABD = area of triangle ………………, and = $\frac{1}{2}$ area of triangle ………………

30) If XYZ is a triangle and M is the midpoint of YZ and the area of XYM = 30 cm^2

Then the area of triangle XYZ = …………, and the area of XZM = ……………….

31) If two triangle are equal in area and drawn in the same base then their vertices are ……………………………

32) If two triangle are equal in area and have equal bases and included between two lines, Then these two lines are ……………………………

33) Area of rhombus = ………………….. or ……………….

34) Perimeter of rhombus = ………………….

35) Area of square = ………………….. or ……………….

36) Perimeter of square = ………………….

37) Area of trapezoid = ………………….. or ……………….

38) A rhombus with side 3 cm and its height 5 cm, Then its area = ……………. cm^2

39) A rhombus with side 9 cm and its height 7 cm, Then its area = ……………. cm^2

40) A rhombus with perimeter 32 cm and its height 5 cm, Then its

area = ……………. cm^2

41) A rhombus with area 50 cm^2 and its height 5 cm, Then its side

length = ……………. cm

42) A rhombus with area 49 cm^2 and its side length 7 cm, Then its

height = ……………. cm

43) A square with side length 9 cm, Then its area = ……………. cm^2

44) A square with area 36 cm^2, Then its side length = ……………. cm

45) A rhombus with diagonal lengths 7 cm and 8 cm, Then its

area = ……………. cm^2

46) A rhombus with diagonal lengths 5 cm and 6 cm, Then its

area = ……………. cm^2

47) A rhombus with diagonal lengths 8 cm and 10 cm, Then its

area = ……………. cm^2

48) A rhombus with area 18 cm^2 and its diagonal length is 4, Then its other diagonal length = ……………. cm

49) A rhombus with area 32 cm^2 and its diagonal length is 16, Then its other diagonal length = ……………. cm

50) A square with diagonal length 6 cm, Then its area = ……………. cm^2

51) A square with area 32 cm^2, Then its diagonal length = ……………. cm

52) A trapezoid with bases lengths 7 cm and 9 cm and its height is 6 cm, Then its area = ……………. cm^2

53) A trapezoid with bases lengths 6 cm and 5 cm and its height is 7 cm, Then its area = ……………. cm^2

54) A trapezoid with bases lengths 8 cm and 7 cm and its height is 9 cm, Then its area = ……………. cm^2

55) A trapezoid with area 72 and its bases lengths 10 cm and 6 cm, Then its height = ……………. cm

56) A trapezoid with area 54 and one of its bases length is 10 cm and its height is 6 cm, Then its other parallel sides = ……………. cm

57) A trapezoid with middle base length 8 cm and its height is 7 cm, Then its

area = ………………. cm^2

58) A trapezoid with area 80 cm^2 and its middle base is 10 cm, Then its

height = ………………. cm

59) A trapezoid with area 96 cm^2 and its height is 8 cm, Then its middle

Base = ………………. cm

60) The two polygons are similar if ………………………………. , …………………………….

61) If two polygons are similar then their corresponding sides are ……………………

62) If two polygons are similar then their corresponding angles are …………………

63) If two polygons are similar to a third then they are ……………………

64) The ratio of enlargement between two congruent polygons = …………….

65) The two triangles are similar if ……………………………. or …………………………….

66) All regular polygons with the same number of sides are ……………….

67) In two triangle if we have two corresponding angles are equal in measure, Then they are ……………….

68) If the ratio of enlargement between two similar polygons is 3 : 5, Then the ratio between their perimeter is ……………….

69) In two right angled triangle if the measure of an acute angle in one is equal to the measure of an acute angle in the other then they are …………………

70) All equilateral triangles are …………….

71) All squares are …………….

72) All regular pentagons are …………….

73) All regular hexagons are …………….

74) In two isosceles triangle if the measure of an angle in one of them is equal to the measure of a corresponding angle in the other then they are …………………

75) In the right angled triangle the perpendicular from the vertex of the right angle to the hypotenuse divides the triangle into two ……………… triangles, and each one if the is ……………… to the original triangle.

76) If the sum of the area of two square on two sides is equal to the area of square on the third side, Then this triangle is …………………………..

77) The projection of a point on a given straight line is a ……………….

78) The projection of a line segment on a given straight line not perpendicular to it is a ……………….

79) The projection of a line segment on a given straight line perpendicular to it is a ……………….

80) The projection of a ray on a given straight line not perpendicular to it is a ……………….

81) The projection of a ray on a given straight line perpendicular to it is a ……………….

82) The length of projection of a line segment on a straight line …………… the length of a line segment itself.

83) The length of projection of a line segment on a straight line perpendicular to it …………… the length of a line segment itself.

84) The length of projection of a line segment on a straight line parallel to it ………….. the length of a line segment itself.

85) In triangle ABC If $(AB)^2 = (BC)^2 + (AC)^2$, Then ABC is a/an ……………. angled triangle.

86) In triangle ABC If $(AB)^2 < (BC)^2 + (AC)^2$, Then ABC is a/an ……………. angled triangle.

87) In triangle ABC If $(AB)^2 > (BC)^2 + (AC)^2$, Then ABC is a/an ……………. angled triangle.

88) The triangle which it's sides are 3 cm, 4 cm and 5 cm it's area = ………. cm^2

89) The triangle which it's sides are 15 cm, 20 cm and 25 cm it's area = ……… cm^2

90) In triangle ABC If $(AB)^2 = (BC)^2 + (AC)^2$ and $m(A) = 35^o$, Then m(B) = …………^{o}

91) In triangle ABC If $(AB)^2 = (BC)^2 + (AC)^2$ and $m(A) = 70^o$, Then m(B) = …………^{o}

92) In triangle ABC If $(AB)^2 = (BC)^2 + (AC)^2$ and $m(A) = 45^o$, Then ABC is a/an ……………………. Triangle.

93) ABC is an isosceles triangle whose two of it's sides are 6 cm and 5 cm, Then it's a/an ………………… angled triangle.

93) ABC is an isosceles triangle whose two of it's sides are 5 cm and 8 cm, Then it's a/an ………………… angled triangle.

94) In triangle ABC if angle a complements angle B, Then ABC is a/an ……………… angled triangle.

95) In triangle ABC if $90^o < m(A) < 180^o$, Then ABC is a/an ……………… angled triangle.

96) In triangle ABC If $(AB)^2 = (BC)^2 + (AC)^2$, Then angle C is a/an ……………. angle.

97) In triangle ABC If $(AB)^2 = (BC)^2 + (AC)^2$, Then angle A is a/an ……………. angle.

98) In triangle ABC If $(AB)^2 < (BC)^2 + (AC)^2$, Then angle C is a/an ……………. angle.

99) In triangle ABC If $(AB)^2 > (BC)^2 + (AC)^2$, Then angle C is a/an ……………. angle.

100) In triangle ABC If $(AB)^2 < (BC)^2 - (AC)^2$, Then angle C is a/an ……………. angle.

101) In triangle ABC If $(AB)^2 > (BC)^2 - (AC)^2$, Then ABC is a/an ……………. angle.

102) In triangle ABC If $(AB)^2 + 0 = (BC)^2 + (AC)^2$, Then ABC is a/an ……………. angled triangle.

103) In triangle ABC If $(AB)^2 – 2 = (BC)^2 + (AC)^2$, Then ABC is a/an ……………. angled triangle.

104) In triangle ABC If $(AB)^2 – (-5) = (BC)^2 + (AC)^2$, Then angle B is a/an ……………. angle.

105) In triangle ABC If $(AB)^2 + (-3) = (BC)^2 + (AC)^2$, Then angle B is a/an ……………. angle.

106) ABC is a triangle whose two of it's sides are 9 cm and 7 cm, Then the third side is between ………. cm and ………. cm.

107) ABC is a triangle whose two of it's sides are 10 cm and 15 cm, Then the third side is between ………. cm and ………. cm.

108) In triangle ABC If $(AB)^2 = (BC – AC)(BC + AC)$, Then ABC is a/an ……………. angled triangle at angle ……….

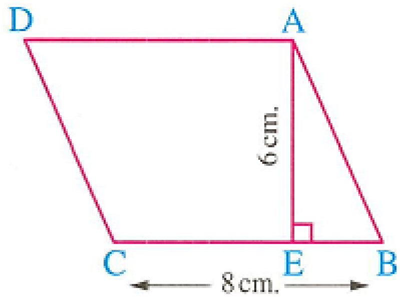
109) In triangle ABC If $(AB)^2 > (BC – AC)(BC + AC)$, Then angle C is a/an ……………. angle.

110) In triangle ABC If $(AB)^2 < (BC – AC)(BC + AC)$, Then angle C is a/an ……………. angle.

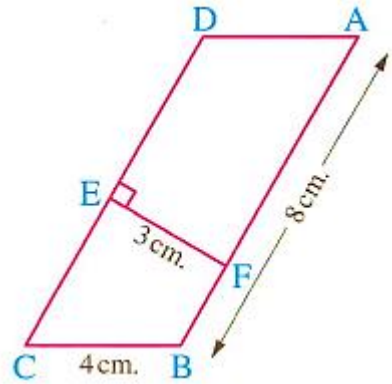
Question (3) Essay problems.

1) In each of the following find the area of ABCD.

A)



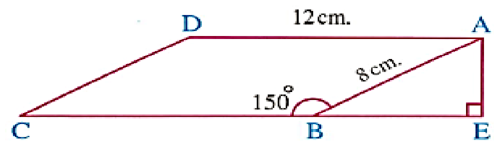
B)



Area of ABCD = ……………………

Area of ABCD = ……………………

2) ABCD is a parallelogram in which m (∠ ABC) = 150° ,
AD = 12 cm. , AB = 8 cm.
, $E \in \overrightarrow{CB}$ and $\overline{AE} \perp \overrightarrow{CB}$
Find : The area of ▱ ABCD



« 48 cm^2. »

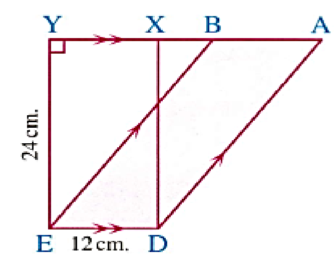
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3) **In the opposite figure :**
$\overleftrightarrow{AB}$ // $\overleftrightarrow{DE}$, $X \in \overrightarrow{AB}$, $Y \in \overrightarrow{AB}$
, XDEY is a rectangle and $\overline{AD}$ // $\overline{BE}$
1 Find the area of the figure ABED
2 If AD = 30 cm. , find the length of the perpendicular from B to $\overline{AD}$



« 288 cm^2. , 9.6 cm. »

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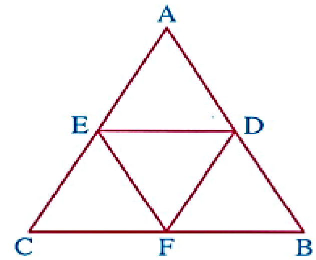
4) **In the opposite figure :**

DBFE and DFCE are two parallelograms

and $F \in \overline{BC}$

Prove that :

The area of the figure ABFE = the area of the figure ADFC



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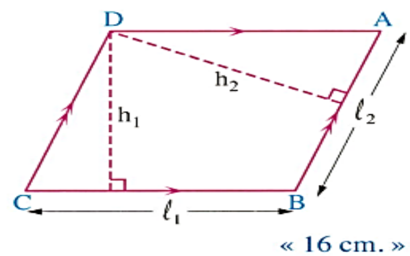
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5) **In the opposite figure :**

ABCD is a parallelogram whose area is 240 cm^2

$\ell_1 : h_1 = 5 : 3$, $\ell_1 : \ell_2 = 4 : 3$ **Find :** h_2



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6)

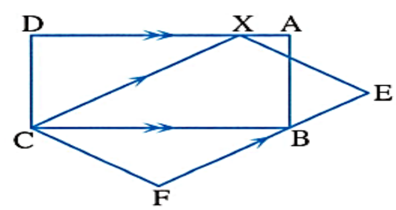
In the opposite figure :

ABCD is a rectangle

, XEFC is a parallelogram.

Prove that :

The area of the rectangle ABCD = The area of the parallelogram XEFC



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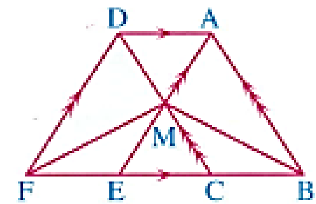
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7) **In the opposite figure :**

ABCD and AEFD are two parallelograms and $\overline{AE} \cap \overline{CD} = \{M\}$ where $E \in \overline{BF}$ and $C \in \overline{BF}$

Prove that :

The area of Δ ABM = the area of Δ DMF



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8) **In the opposite figure :**

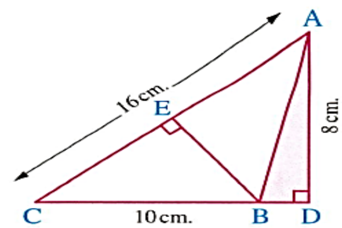
$\overleftrightarrow{AD} \perp \overrightarrow{CB}$, $\overline{BE} \perp \overline{AC}$, AC = 16 cm. ,

BC = 10 cm. and AD = 8 cm.

Find :

1 The area of Δ ABC

2 The length of $\overline{BE}$



« 40 cm^2 , 5 cm. »

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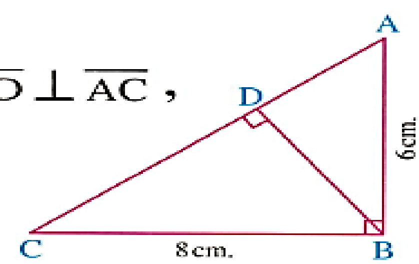
9)

In the opposite figure :

Δ ABC is right-angled at B , $D \in \overline{AC}$ such that : $\overline{BD} \perp \overline{AC}$,

if AB = 6 cm. and BC = 8 cm.

Find : The length of $\overline{BD}$



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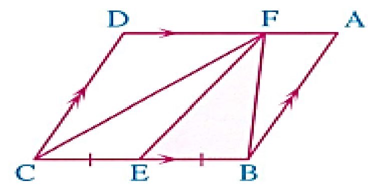
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10) ***In the opposite figure :***



ABCD is a parallelogram , $F \in \overline{AD}$

and E is the midpoint of $\overline{BC}$

Prove that :

The area of Δ BEF $= \frac{1}{4}$ the area of ▱ ABCD

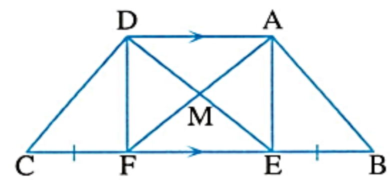
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11) **In the opposite figure :**



$\overline{AD} // \overline{BC}$, $E \in \overline{BC}$, $F \in \overline{BC}$

where BE = CF , $\overline{AF} \cap \overline{ED} = \{M\}$

Prove that :

1 The area of Δ AME = The area of Δ DMF

2 The area of the figure ABEM = The area of the figure DCFM

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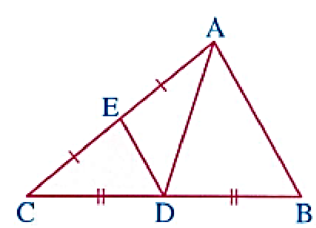
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12) **In the opposite figure :**



D is the midpoint of $\overline{BC}$,

E is the midpoint of $\overline{AC}$,

the area of Δ DEC = 5 cm^2.

Calculate : The area of Δ ABC

« 20 cm^2. »

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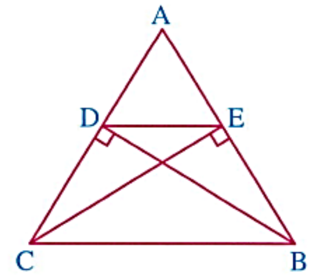
13) In the opposite figure :

AB = AC , $\overline{BD} \perp \overline{AC}$ and $\overline{CE} \perp \overline{AB}$

Prove that :

1 $\overline{ED} // \overline{BC}$

2 The area of Δ ADB = the area of Δ AEC



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14)

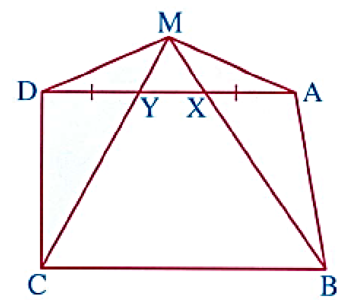
In the opposite figure :

ABCD is a quadrilateral.

X $\in \overline{AD}$ and Y $\in \overline{AD}$ such that AX = YD

The area of Δ ABM = the area of Δ DCM

Prove that : $\overline{AD} // \overline{BC}$



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15) Find which will be the greater shape in area:

A) A square with diagonal length 12 cm or a rhombus with side length 8 cm and its height 9 cm.

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B) A trapezoid with middle base 11 cm and its height 6 cm or a rhombus with side length 13 cm and its height 5 cm.

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C) A square with diagonal length 14 cm or a trapezoid with bases lengths 14 cm and 10 cm and its height 8 cm.

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D) A rhombus with diagonal lengths 12 cm and 8 cm or a trapezoid with bases lengths 6 cm and 8 cm and its height 7 cm.

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16) If the ratio between rhombus diagonal lengths is 5 : 8 and one of its diagonal is 15 cm, Find its area.

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17) A piece of land in the shape of trapezoid whose area is 4000 cm^2, The ratio between its parallel bases and its height is 3 : 2 : 4 respectively, Find its height and its middle base.

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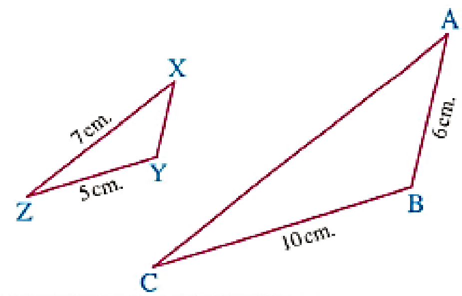
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18) **In the opposite figure :**

$\Delta ABC \sim \Delta XYZ$

Find : AC and XY « 14 cm. , 3 cm. »



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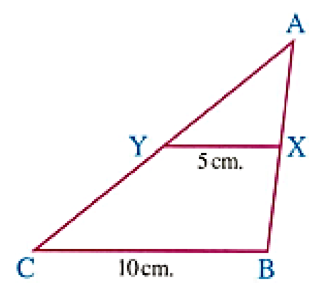
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19) **In the opposite figure :**

If $\Delta AXY \sim \Delta ABC$

, XY = 5 cm. and BC = 10 cm.

Prove that : 1 $\overline{XY} \parallel \overline{BC}$ 2 Y is the midpoint of $\overline{AC}$



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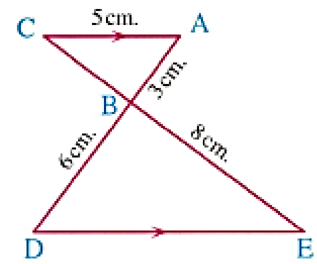
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20)

In the opposite figure :

$\overline{AC} \parallel \overline{ED}$, $\overline{AD} \cap \overline{CE} = \{B\}$

, AC = 5 cm. , BE = 8 cm. , AB = 3 cm. and BD = 6 cm.



1 **Prove that :** Δ ABC ~ Δ DBE

2 **Find the length of each of :** $\overline{BC}$ and $\overline{ED}$

3 **Find :** The ratio of enlargement.

« 4 cm. , 10 cm. , 2 »

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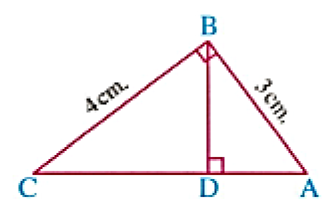
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21)

In the opposite figure :

ABC is a right-angled triangle at B in which :

AB = 3 cm. , BC = 4 cm. and $\overline{BD} \perp \overline{AC}$



1 **Prove that :** Δ BAC ~ Δ DAB

2 **Find the length of each of :** $\overline{AD}$ and $\overline{DC}$

« 1.8 cm. , 3.2 cm. »

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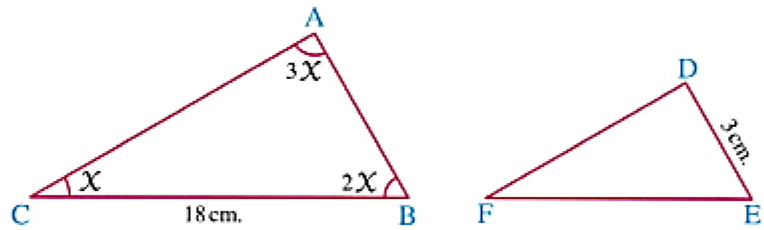
22)

In the opposite figure :

If $\Delta ABC \sim \Delta DEF$

, $BC = 18$ cm. and $DE = 3$ cm.

Find the length of : $\overline{EF}$



« 6 cm. »

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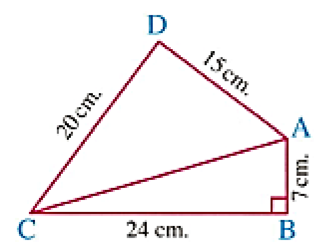
23)

In the opposite figure :

ABCD is a quadrilateral in which : $m(\angle ABC) = 90°$,

$AB = 7$ cm. , $BC = 24$ cm. , $CD = 20$ cm. and $DA = 15$ cm.

Prove that : $m(\angle ADC) = 90°$



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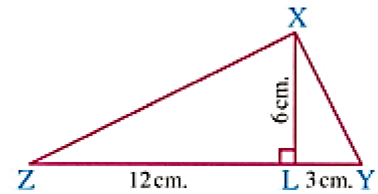
24)

In the opposite figure :

XYZ is a triangle in which : $\overrightarrow{XL} \perp \overline{YZ}$, LX = 6 cm. ,

LY = 3 cm. and LZ = 12 cm.

Prove that : m (∠ YXZ) = 90°



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25)

In the opposite figure :

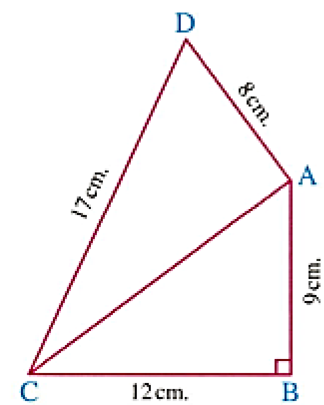
ABCD is a quadrilateral in which : m (∠ B) = 90° ,

AB = 9 cm. , BC = 12 cm. ,

CD = 17 cm. and DA = 8 cm.

Prove that : m (∠ DAC) = 90° ,

then find : The area of the figure ABCD « 114 cm^2 »



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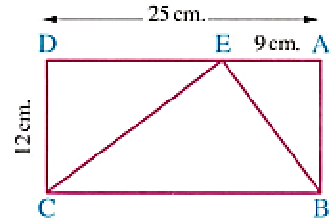
26) **In the opposite figure :**

ABCD is a rectangle in which :

DC = 12 cm. , AD = 25 cm. and $E \in \overline{AD}$

such that : AE = 9 cm.

Prove that : $\overline{BE} \perp \overline{EC}$



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27)

In the opposite figure :

ABCD is a trapezium in which :

$\overline{AB}$ // $\overline{DC}$, $\overline{AD} \perp \overline{DC}$, AD = 12 cm. ,

BC = 13 cm. , DC = 33.8 cm. and $\overline{BE} \perp \overline{DC}$

First :

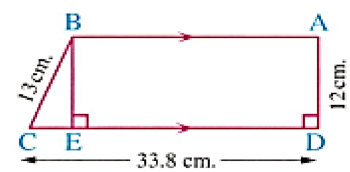
Find : 1 The length of each of $\overline{CE}$ and $\overline{AB}$

2 The length of $\overline{DB}$

3 The area of the trapezium ABCD

Second :

Prove that : m (∠ DBC) = 90°



« 5 cm. , 28.8 cm. , 31.2 cm. , 375.6 cm^2 »

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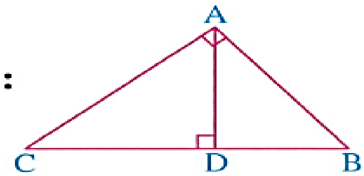
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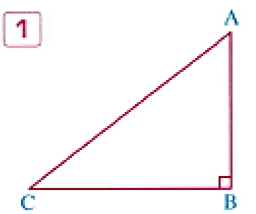
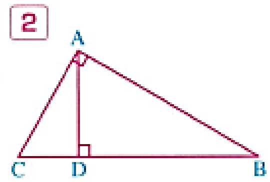
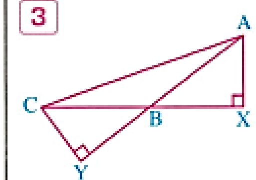
28) **In the opposite figure :**



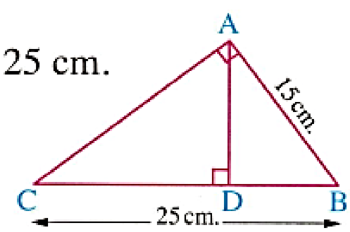
ΔABC is right-angled at A and $\overline{AD} \perp \overline{BC}$ **, complete :**

1. The projection of $\overline{AB}$ on $\overleftrightarrow{BC}$ is ………
2. The projection of $\overline{AC}$ on $\overleftrightarrow{BC}$ is ………
3. The projection of $\overline{BC}$ on $\overleftrightarrow{AC}$ is ………
4. The projection of $\overline{BC}$ on $\overleftrightarrow{AB}$ is ………
5. The projection of $\overline{AC}$ on $\overleftrightarrow{AD}$ is ………
6. The projection of $\overline{AD}$ on $\overleftrightarrow{BC}$ is ………
7. The projection of $\overline{AB}$ on $\overleftrightarrow{AD}$ is ………

29) **Complete the following table :**

The figure / The projections	1 	2 	3 
The projection of $\overline{AC}$ on $\overleftrightarrow{BC}$	………………………	………………………	………………………
The projection of $\overline{AB}$ on $\overleftrightarrow{BC}$	………………………	………………………	………………………
The projection of $\overline{AC}$ on $\overleftrightarrow{AB}$	………………………	………………………	………………………
The projection of $\overline{BC}$ on $\overleftrightarrow{AB}$	………………………	………………………	………………………

30) ***In the opposite figure :***



ABC is a triangle in which , $m(\angle BAC) = 90^\circ$

and $D \in \overline{BC}$ such that $\overline{AD} \perp \overline{BC}$, AB = 15 cm. and BC = 25 cm.

Complete the following :

1. $(AC)^2 = (BC)^2 - (………)^2$ $\therefore$ AC = ……… cm.
2. $(AB)^2 = BD \times ………$ $\therefore$ BD = ……… cm.
3. $(AC)^2 = ……… \times CB$ $\therefore$ CD = ……… cm.
4. $(AD)^2 = BD \times ………$ $\therefore$ AD = ……… cm.

31)

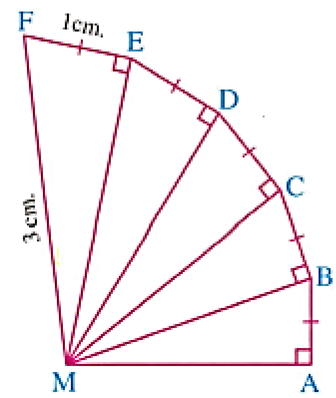
In the opposite figure :

$AB = BC = CD = DE = EF = 1$ cm.

and $MF = 3$ cm.

Find :

1. The length of the projection of $\overline{FM}$ on $\overleftrightarrow{EM}$
2. The length of the projection of $\overline{BM}$ on $\overleftrightarrow{AM}$



« $2\sqrt{2}$ cm. , 2 cm. »

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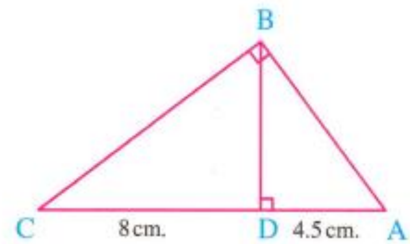
32)

In the opposite figure :

ΔABC is right-angled at B and $\overline{BD} \perp \overline{AC}$

If $AD = 4.5$ cm. and $DC = 8$ cm.

Find : The length of each of $\overline{AB}$, $\overline{BC}$ and $\overline{BD}$



« 7.5 cm. , 10 cm. , 6 cm. »

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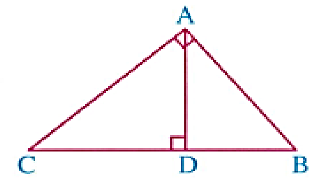
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33) **In the opposite figure :**

Δ ABC is right-angled at A , $\overline{AD} \perp \overline{BC}$

Complete each of the following :



1. $(AC)^2 = \dots\dots + \dots\dots$
2. $(AC)^2 = \dots\dots - \dots\dots$
3. $(AC)^2 = \dots\dots \times \dots\dots$
4. $(AD)^2 = \dots\dots \times \dots\dots$
5. $AC \times AB = \dots\dots \times \dots\dots$
6. $\Delta ABC \sim \Delta \dots\dots \sim \Delta \dots\dots$

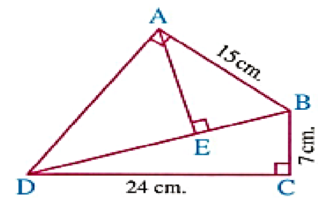
34) **In the opposite figure :**

ABCD is a quadrilateral where :

m ($\angle$ BCD) = m ($\angle$ BAD) = 90° ,

$\overline{AE} \perp \overline{BD}$, BC = 7 cm. , CD = 24 cm.

and AB = 15 cm.



Find : 1. The length of each of $\overline{BD}$ and $\overline{AD}$

2. The length of the projection of $\overline{AB}$ on $\overleftrightarrow{BD}$

3. The length of the projection of $\overline{AD}$ on $\overleftrightarrow{AE}$

« 25 cm. , 20 cm. , 9 cm. , 12 cm. »

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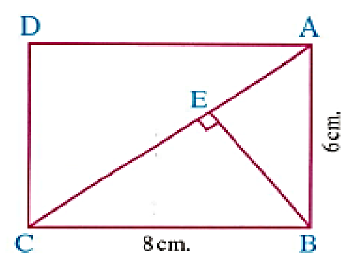
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35) **In the opposite figure :**

ABCD is a rectangle in which : AB = 6 cm. , BC = 8 cm.

and E $\in \overline{AC}$ such that $\overline{BE} \perp \overline{AC}$

Find the length of each of :



1. $\overline{BE}$
2. $\overline{EC}$

« 4.8 cm. , 6.4 cm. »

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36) Classify each of the following by it's sides and it's angles.

A) Triangle ABC Whose AB = 3 cm, BC = 4 cm and AC = 5 cm.

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B) Triangle ABC Whose AB = 5 cm, BC = 5 cm and AC = 5 cm.

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C) Triangle ABC Whose AB = 7 cm, BC = 6 cm and AC = 5 cm.

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D) Triangle ABC Whose AB = 12 cm, BC = 9 cm and AC = 15 cm.

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E) Triangle ABC Whose AB = 6 cm, BC = 6 cm and AC = 6 cm.

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F) Triangle ABC Whose AB = 20 cm, BC = 15 cm and AC = 25 cm.

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G) Triangle ABC Whose AB = 6 cm, BC = 8 cm and AC = 6 cm.

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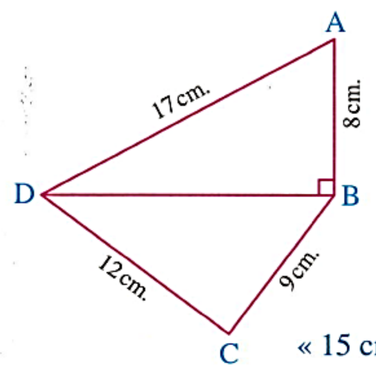
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37)

In the opposite figure :

ABCD is a quadrilateral in which : AB = 8 cm.,
BC = 9 cm. , CD = 12 cm. , AD = 17 cm.
and $\overline{DB} \perp \overline{AB}$

1. Find the length of the projection of $\overline{AD}$ on $\overleftrightarrow{BD}$
2. Determine the type of Δ BCD according to its angles.



« 15 cm. »

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38)

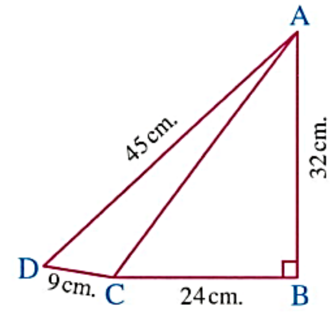
In the opposite figure :

ABCD is a quadrilateral in which :

m (∠ B) = 90° , AB = 32 cm. , BC = 24 cm. ,

CD = 9 cm. and AD = 45 cm.

Prove that : ACD is an obtuse-angled triangle.



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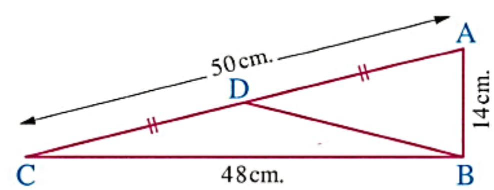
39)

In the opposite figure :

$\overline{BD}$ is a median in Δ ABC , AB = 14 cm. ,

BC = 48 cm. and AC = 50 cm.

Prove that : ∠ BDC is an obtuse angle.



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حمل الآن

مجانا وحصريا

المراجعة رقم (3)

الترم الثانى

ذاكرولى
RaNia SaYed

WWW.ZAKROLYUP.COM
حمل
الان
حصريا

SECOND: GEOMETRY

Choose the correct answer :

1.	In Δ ABC , if $(AB)^2 > (BC)^2 + (AC)^2$, then $\angle$ C is …………… (a) acute. (b) right. (c) obtuse. (d) straight.
2.	A rhombus whose diagonals lengths are 6 cm. , 10 cm. has area …………… cm^2 (a) 60 (b) 30 (c) 15 (d) 10
3.	The ratio between the lengths of two corresponding sides of two similar polygons is 3 : 5 , then the ratio between their perimeters is …………… (a) 2 : 5 (b) 5 : 3 (c) 3 : 5 (d) 1 : 2
4.	A square of perimeter 20 cm. , then its area equals …………… cm^2 (a) 20 (b) 25 (c) 50 (d) 100
5.	If the area of a trapezium is 100 cm^2 and its height is 5 cm. , then the length of its middle base = …………… cm. (a) 20 (b) 30 (c) 40 (d) 50
6.	The median of a triangle divides its surface into two triangles …………… (a) congruent. (b) equal in area. (c) similar. (d) coincide.
7.	A trapezium whose bases lengths are 6 cm. , 8 cm. , then the length of its middle base equals …………… cm. (a) 48 (b) 24 (c) 14 (d) 7
8.	If two polygons are similar and the ratio between the lengths of two corresponding sides is 1 : 3 and the perimeter of the smaller polygon is 15 cm. , then the perimeter of the greater polygon is …………… cm. (a) 30 (b) 45 (c) 60 (d) 75

9. If the area of the triangle is 24 $cm.^2$ and its height = 8 cm. , then the length of the corresponding base .... cm.

(a) 16 (b) 6 (c) 3 (d) 12

10. ABC is a right-angled triangle at B , $\overline{BD} \perp \overline{AC}$, then the projection of $\overline{BD}$ on $\overleftrightarrow{AC}$ is ....

(a) A (b) B (c) C (d) D

11. The area of parallelogram whose length of its base 6 cm. and its corresponding height of this base 4 cm. equals .... cm^2.

(a) 12 (b) 20 (c) 24 (d) 48

12. The triangle whose lengths of its sides 6 cm. , 8 cm. , 10 cm. is ....

(a) acute-angled triangle. (b) right-angled triangle.

(c) obtuse-angled triangle. (d) otherwise.

13. The rhombus whose lengths of its diagonals 6 cm. and 10 cm. , then its area = ... cm^2.

(a) 60 (b) 30 (c) 15 (d) 10

14. Trapezium of length of its middle base 8 cm. and surface area 56 cm^2. ,

then its height = ... cm.

(a) 32 (b) 24 (c) 448 (d) 7

15. All .... are similar.

(a) squares (b) triangles (c) rectangles (d) parallelograms

16. A square of diagonal length 12 cm. , then its area = ... cm^2.

(a) 24 (b) 36 (c) 48 (d) 72

17. In Δ ABC if $(AC)^2 = (AB)^2 + (BC)^2$, then $\angle$ .... is right.

(a) A (b) B (c) C (d) otherwise

18. ABC is a triangle where AB = 2 cm. , BC = 6 cm. and CA = 5 cm.

, then m ($\angle$ A) .... 90°

(a) $<$ (b) $>$ (c) = (d) $\geq$

19. If $\Delta ABC \sim \Delta XYZ$, m ($\angle B$) = 50°, then m ($\angle Y$) = ...

(a) 30° (b) 40° (c) 50° (d) 60°

20. If the ratio between the length of two corresponding sides in two similar triangles is equal to 1, then the two triangles are ....

(a) congruent. (b) different. (c) parallel. (d) otherwise.

21. ✱ If the lengths of two adjacent sides of a parallelogram are 8 cm. and 10 cm. and its greater height is 5 cm., then its area = ... cm^2.

(a) 80 (b) 50 (c) 40 (d) 18

22. The length of the two adjacent sides in a parallelogram are 7 cm., 5 cm. and the length of its smallest height is 4 cm., then the area of the parallelogram equals .... cm^2.

(a) 35 (b) 25 (c) 28 (d) 49

23. If the ratio of enlargement between two similar triangles equals ...., then the two triangles are congruent.

(a) 1 (b) 2 (c) 0.5 (d) 0.25

24. If ΔABC in which $(AB)^2 + (BC)^2 < (AC)^2$, then ($\angle B$) is ....

(a) acute. (b) right. (c) reflex. (d) obtuse.

25. If the projection of a line segment on a straight line is a point, then the line segment .... the straight line.

(a) // (b) $\perp$ (c) $\equiv$ (d) $\subset$

26. If $\Delta ABC \sim \Delta DEO$, $AB = \frac{1}{3} DE$, then the perimeter of ΔABC equals .... the perimeter of ΔDEO

(a) $\frac{1}{3}$ (b) $\frac{1}{2}$ (c) 3 (d) 9

27. ✱ The ratio between the area of the parallelogram and the area of the triangle whose base is common and are included between two parallel straight lines = ...

(a) 1 : 2 (b) 1 : 3 (c) 2 : 1 (d) 2 : 3

28. The length of the base of a triangle whose area 36 cm^2 and height 8 cm. is .... cm.

(a) 6 (b) 9 (c) 18 (d) 20

29. If $\overline{AB} \parallel \overleftrightarrow{XY}$, then the length of the projection of $\overline{AB}$ on $\overleftrightarrow{XY}$ .... length of $\overline{AB}$
(a) < (b) > (c) = (d) ≥

30. The area of the trapezium whose middle bases 7 cm. , and height 6 cm. = ... cm^2
(a) 21 (b) 42 (c) 40 (d) 13

31. If the area of a parallelogram is 80 cm^2 and one of its bases length 10 cm.
, then the length of the corresponding height of this base = ... cm.
(a) 8 (b) 6 (c) 7 (d) 20

32. Δ ABC in which AB = 4 cm. , BC = 6 cm. , AC = 8 cm.
, then m (∠ B) .... 90°
(a) > (b) < (c) = (d) twice

33. ✱ The length of the base of a triangle whose area 30 cm^2 and height 6 cm. is .... cm.
(a) 5 (b) 10 (c) 15 (d) 20

34. In Δ ABC , if $(AB)^2 > (BC)^2 + (AC)^2$, then angle C is ....
(a) acute. (b) right. (c) obtuse. (d) straight.

35. If $\overline{AB} \parallel \overline{XY}$, then the length of the projection of $\overline{AB}$ on $\overline{XY}$ .... the length of $\overline{AB}$
(a) > (b) ≤ (c) = (d) <

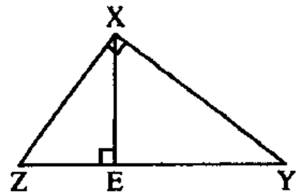
36. A rhombus whose diagonal lengths 12 cm. , 9 cm. , then its area = ... cm^2
(a) 18 (b) 54 (c) 45 (d) 108

37. Area of the trapezium whose base lengths are 6 cm. , 8 cm.
and its height 10 cm. = ... cm^2
(a) 140 (b) 480 (c) 70 (d) 120

38. ABC is a triangle in which $(AB)^2 = (BC)^2 + (AC)^2$ and m (∠ B) = 40°
, then m (∠ A) = ...
(a) 40° (b) 50° (c) 90° (d) 130°

39. ✱ The median of a triangle divides its surface into two ....
(a) congruent triangles. (b) triangles equal in area.
(c) isosceles triangle. (d) right-angled triangle.

40. **In the opposite figure :**



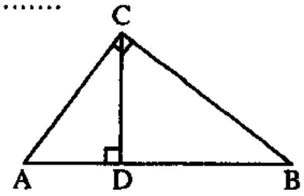
$EY \times EZ =$ ……………

(a) $(XY)^2$ (b) $(XZ)^2$

(c) $(XE)^2$ (d) $(YZ)^2$

Complete each of the following :

1.	Two triangles which have the same base and the vertices opposite to this base lie on a straight line parallel to the base have ……………
2.	In Δ ABC , If $(AC)^2 + (BC)^2 = (AB)^2$, then m (∠ ……………) = 90°
3.	If the point A ∈ the line L , then the projection of the point A on the line L is ……………
4.	If the area of a parallelogram is 35 $cm.^2$ and one of its bases length is 10 cm. , then the length of the corresponding height of this base = …………… cm.
5.	A trapezium whose bases lengths are 8 cm. , 10 cm. and its height is 5 cm. , then its area equals …………… $cm.^2$
6.	The two polygons are similar if their corresponding sides are …………… and their corresponding angles are ……………
7.	The area of a rhombus is 24 $cm.^2$, the length of one of its diagonals is 8 cm. , then the length of the other diagonal is ……………
8.	In Δ ABC , if $(AB)^2 = (AC)^2 - (BC)^2$, then Δ ABC is right-angled at ……………
9.	A triangle whose side lengths are 6 cm. , 8 cm. and 11 cm. , then its type according to its angles is ……………
10.	Area of triangle is equal to half of area of a parallelogram if they have a common ……………
11.	The projection of point on a straight line is ……………
12.	If the triangle ABC is obtuse-angled triangle at B , then $(AC)^2$ …………… $(AB)^2 + (BC)^2$
13.	The square whose length of its diagonal 8 cm. , then its area = …………… cm^2.
14.	The two triangles have same base and the vertices opposite to this base on straight line parallel to the base ……………

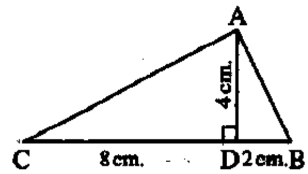
15.	Area of triangle = $\frac{1}{2}$ × .... × corresponding height.
16.	In Δ ABC , if $(AB)^2 + (BC)^2 < (AC)^2$, then ∠ B is ....
17.	The two triangles are similar if the corresponding angles are .... **From the opposite figure :** (a) The projection of $\overline{CD}$ on $\overleftrightarrow{AB}$ is .... (b) The projection of $\overline{BC}$ on $\overleftrightarrow{AB}$ is .... 
18.	A rhombus whose diagonal lengths are 6 cm. , 10 cm. has area .... cm^2
19.	If Δ ABC ~ Δ XYZ , m (∠ A) + m (∠ B) = 60° , then m (∠ Z) = ...
20.	The area of the trapezium whose parallel bases 6 cm. , 10 cm. and height 5 cm. equals ....
21.	The two polygons are similar to a third are ....
22.	The area of rhombus whose perimeter is 20 cm. and height 4 cm. = ...
23.	The projection of a point which belong to a straight line on this line is ....
24.	The area of the rhombus whose diagonals 6 cm. , 8 cm. equals .... cm^2
25.	The two polygons are similar if the corresponding sides .... and their corresponding angles ....
26.	The diagonal of a square whose area 50 cm^2 equals .... cm.
27.	If two polygons are similar and the ratio between the lengths of two corresponding side is 1 : 3 and the perimeter of smaller polygons is 12 cm. , then the perimeter of the greater polygon is ....
28.	The ratio between the length of two corresponding sides of two similar polygon is 3 : 5 , then the ratio between their perimeter = ...
29.	If $\overline{AD} \perp \overline{BC}$, then the projection of $\overline{AD}$ on $\overleftrightarrow{BC}$ is ....
30.	A square of diagonal length 12 cm. , then its area = ... cm^2
31.	A triangle whose side lengths 6 cm. , 8 cm. , 11 cm. , then its type according to its angle is ....

32. If $\Delta ABC \sim \Delta DEF$ and $m(\angle B) + m(\angle C) = 70°$, then $m(\angle D) =$ .... °

Essay problems:

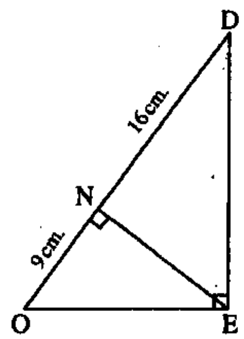
1. The sides lengths of one of two similar triangles are 3 cm. , 4 cm. , 5 cm. and the perimeter of the other triangle is 36 cm. find the side lengths of the other triangle.

2. **In the opposite figure :**
ABC is a triangle in which : BD = 2 cm.
, CD = 8 cm. , AD = 4 cm. , $\overline{AD} \perp \overline{BC}$
Prove that : $m(\angle BAC) = 90°$

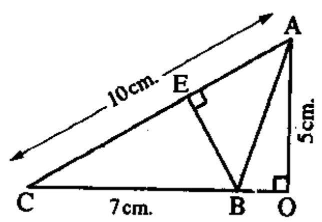


3. ABCD is a parallelogram in which : AB = 18 cm. and BC = 12 cm.
We draw $\overline{DE} \perp \overline{BC}$, $\overline{DO} \perp \overline{AB}$, DE = 15 cm.
Calculate the area of parallelogram ABCD and find the length of $\overline{DO}$

4. **In the opposite figure :**
DEO is a right-angled triangle at E
, $\overleftrightarrow{EN} \perp \overline{DO}$, DN = 16 cm.
and ON = 9 cm.
Find the length of each of : $\overline{EN}$, $\overline{ED}$, $\overline{EO}$

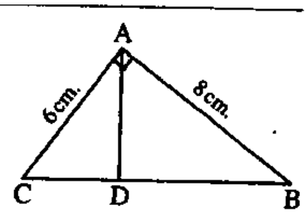


5. **In the opposite figure :**
$\overleftrightarrow{AO} \perp \overleftrightarrow{CB}$, $\overline{BE} \perp \overline{AC}$
, AC = 10 cm. , BC = 7 cm. and AO = 5 cm.
Find : (1) The length of $\overline{BE}$
(2) The area of ΔABC



6. ABCD is a parallelogram in which : AB = 8 cm. , AC = 20 cm. and BD = 12 cm.
Prove that : $m(\angle ABD) = 90°$, then find the area of this parallelogram.

7. **In the opposite figure :**
ΔDBA is a similar to ΔABC , $m(\angle BAC) = 90°$
Prove that : $\overline{AD} \perp \overline{BC}$ and if AB = 8 cm. , AC = 6 cm.
Find the length of : $\overline{BD}$



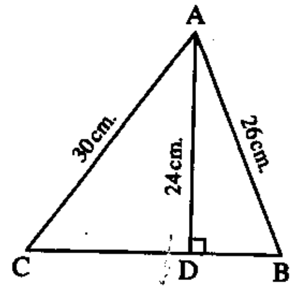
8. **In the opposite figure :**

ABC is a triangle , $\overline{AD} \perp \overline{BC}$

If AD = 24 cm. , AB = 26 cm.

and AC = 30 cm.

Find : BC , then calculate area of Δ ABC



---

9. Δ EFD ~ Δ ABC , AB = 4 cm. , BC = 5 cm. , AC = 6 cm.

, if the perimeter of Δ EFD = 60 cm. , find the length of sides Δ EFD

---

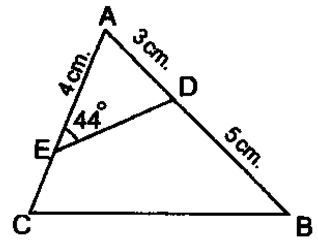
10. **In the opposite figure :**

Δ ABC ~ Δ AED

, m (∠ AED) = 44° , AD = 3 cm. , EA = 4 cm.

, DB = 5 cm. , BC = 8 cm.

find the length of each of : $\overline{ED}$ and $\overline{EC}$



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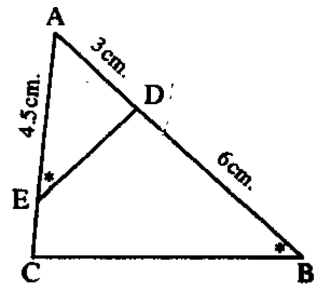
11. **In the opposite figure :**

m (∠ AED) = m (∠ B) , AD = 3 cm.

, AE = 4.5 cm. and BD = 6 cm.

(1) **Prove that :** Δ ADE ~ Δ ACB

(2) **Find :** The length of $\overline{EC}$



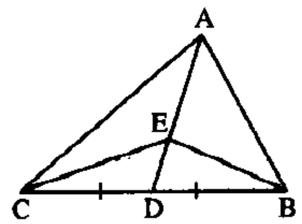
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12. ✱ **In the opposite figure :**

ABC is a triangle with a median $\overline{AD}$

, E ∈ $\overline{AD}$, draw $\overline{BE}$ and $\overline{CE}$

Prove that : The area of Δ ABE = the area of Δ ACE



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13. **In the opposite figure :**

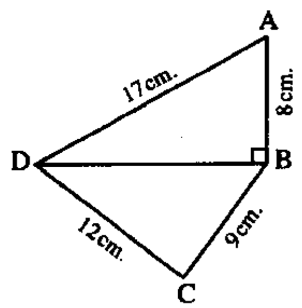
ABCD is a quadrilateral in which

AB = 8 cm. , BC = 9 cm. and CD = 12 cm.

, AD = 17 cm. and $\overline{DB} \perp \overline{AB}$

(1) **Find :** The length of $\overline{BD}$

(2) **Prove that :** m (∠ C) = 90°



14. If the lengths of the two parallel bases of a trapezium are 5 cm. , 7 cm. and if the length of its height 4 cm. , find its area

---

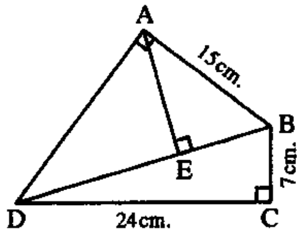
15. **In the opposite figure :**

ABCD is a quadrilateral , where m (∠ BCD) = m (∠ BAD) = 90°

, $\overline{AE} \perp \overline{BD}$, BC = 7 cm. , CD = 24 cm. and AB = 15 cm.

Find : (1) The length of $\overline{BD}$ and $\overline{AD}$

(2) The length of the projection of $\overline{AB}$ on $\overleftrightarrow{BD}$



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16. The ratio between the length of corresponding sides of two similar triangle is 3 : 5 and if the perimeter of the greater is 60 cm. , find the perimeter of the smaller triangles.

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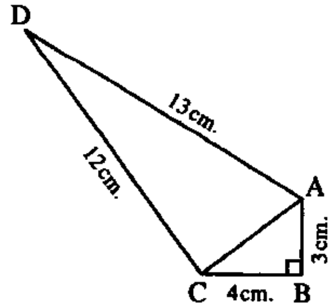
17. **In the opposite figure :**

AB = 3 cm. , BC = 4 cm. , AD = 13 cm.

, CD = 12 cm. , m (∠ B) = 90°

(1) **Find :** The length of : $\overline{AC}$

(2) **Prove that :** m (∠ ACD) = 90°



---

18. Δ ABC where AB = 6 cm. , BC = 8 cm. , AC = 4 cm. , determine the type of the angle BAC

---

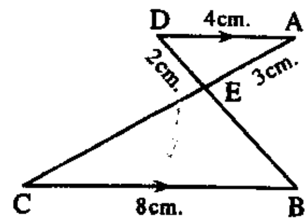
19. **In the opposite figure :**

$\overline{AD}$ // $\overline{BC}$, AD = 4 cm. , AE = 3 cm.

, DE = 2 cm. , BC = 8 cm.

(1) **Prove that :** Δ AED ~ Δ CED

(2) **Find :** The perimeter of Δ EBC



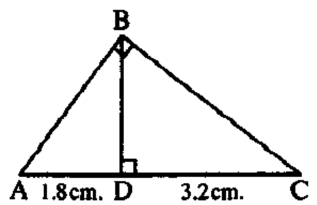
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20. **In the opposite figure :**

m (∠ ABC) = 90° , $\overline{BD} \perp \overline{AC}$

, AD = 1.8 cm. , DC = 3.2 cm.

Find : The length of each : $\overline{BD}$, $\overline{AB}$



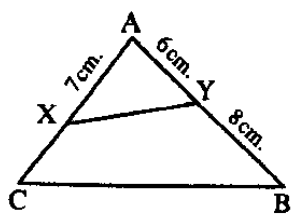
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21. **In the opposite figure :**

If Δ AXY ~ Δ ABC , AX = 7 cm. , AY = 6 cm. , YB = 8 cm.

(1) **Find :** The length of $\overline{XC}$

(2) **Find :** $\frac{XY}{BC}$



22.

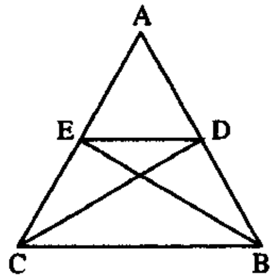
✱ In the opposite figure :

ABC is a triangle in which

$D \in \overline{AB}$ and $E \in \overline{AC}$

such that the area of Δ ABE = the area of Δ ACD

Prove that : $\overline{DE} \parallel \overline{BC}$



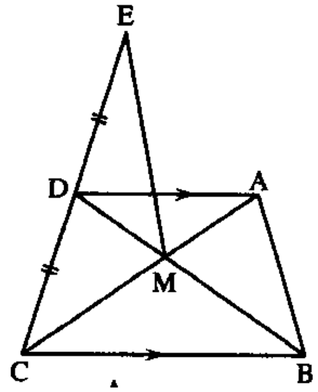
23.

✱ In the opposite figure :

$\overline{AD} \parallel \overline{BC}$ and $\overline{AC} \cap \overline{BD} = \{M\}$

, D is the midpoint of $\overline{EC}$

Prove that : The area of Δ MDE = the area of Δ AMB



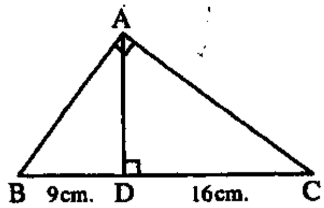
24.

In the opposite figure :

In Δ ABC , BD = 9 cm.

, DC = 16 cm.

Find : Lengths of each of : $\overline{AD}$, $\overline{AB}$, $\overline{AC}$



25.

In the opposite figure :

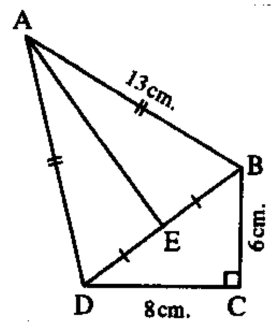
ABCD is a quadrilateral

in which m ($\angle$ C) = 90°

AB = AD = 13 cm. , BC = 6 cm.

, CD = 8 cm. , E is midpoint of $\overline{BD}$

Find : The area of the shape ABCD



26.

In the opposite figure :

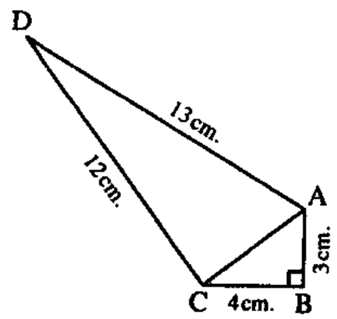
AB = 3 cm. , BC = 4 cm.

, AD = 13 cm.

, CD = 12 cm.

and m ($\angle$ ABC) = 90°

Prove that : m ($\angle$ ACD) = 90°



SECOND: GEOMETRY

Choose the correct answer :

1. Δ ABC in which AB = 3 cm. , BC = 6 cm. , and AC = 4 cm. , then m ($\angle$ B) .... 90°

   (a) < (b) > (c) = (d) ≤

2. If $\overline{AC}$ is the projection of $\overline{AB}$ on $\overleftrightarrow{AC}$, then AC .... AB

   (a) < (b) > (c) = (d) ≤

3. If Δ ABC ~ Δ DEF and AB = $\frac{2}{5}$ DE , then the perimeter of Δ ABC = ... the perimeter of Δ DEF

   (a) 2 (b) 5 (c) $\frac{2}{5}$ (d) $\frac{4}{25}$

4. ABC is a right-angled triangle at B , AC = 10 cm. , BC = 8 cm. , then AB = ... cm.

   (a) 8 (b) 10 (c) 6 (d) 4

5. ABC is a triangle in which $(AB)^2 = (AC)^2 + (BC)^2$, m ($\angle$ B) = 40° , then m ($\angle$ A) = ...

   (a) 90° (b) 40° (c) 130° (d) 50°

6. ✱ The triangle whose base length is 6 cm. and its area is 24 cm^2 , the corresponding height = ... cm.

   (a) 4 (b) 8 (c) 3 (d) 18

7. A square of diagonal length 12 cm. , then its area = ... cm^2

   (a) 24 (b) 36 (c) 48 (d) 72

8. If Δ ABC ~ Δ DEF and m ($\angle$ B) + m ($\angle$ C) = 70° , then m ($\angle$ D) = ...

   (a) 70° (b) 35° (c) 140° (d) 110°

9. The middle base of a trapezium = 12 cm. long and its height = 6 cm. , then its area = ... cm^2.
(a) 72 (b) 36 (c) 9 (d) 18

10. The length of the projection of a line segment on a given straight line .... the length of the line segment itself.
(a) < (b) ≤ (c) ≥ (d) =

11. ABC is an obtuse-angled triangle at A in which AB = 5 cm. , BC = 8 cm. , then AC = ... cm.
(a) 5 (b) 7 (c) 8 (d) 13

12. ✱ The two triangles drawn on a common base their vertices located on a straight line parallel to the base are ....
(a) congruent. (b) similar. (c) equal in perimeter. (d) equal in area.

13. If the ratio of enlargement between two triangles equals 1 , then the two triangles are ....
(a) congruent. (b) different. (c) right-angled. (d) coincide.

14. The area of square of diagonal length 6 cm. is .... cm^2.
(a) 18 (b) 36 (c) 12 (d) 6

15. In Δ ABC if $(AC)^2 + (AB)^2 < (BC)^2$, then $\angle$ A is ....
(a) acute. (b) right. (c) obtuse. (d) straight.

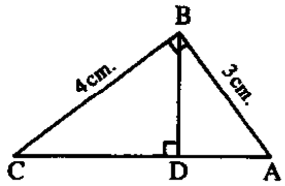
16. A trapezium whose middle base length is 8 cm. , then the length of the two parallel bases may be .... cm.
(a) 3 , 5 (b) 6 , 10 (c) 4 , 6 (d) 4 , 4

Complete each of the following :

1. The two polygons that are similar to third are ....
2. The two diagonals of the isosceles trapezium are ....
3. The two triangles are similar if its corresponding side lengths are ....
4. The area of the trapezium = ... × ....

5. **Complete : In the opposite figure :**

ABC is a right-angled triangle at B , $\overline{BD} \perp \overline{AC}$



(1) The projection of $\overline{AB}$ on $\overleftrightarrow{AC}$ is ……………

(2) $(BD)^2 = AD \times$ …………… (3) $(BC)^2 = CA \times$ ……………

(4) $\Delta ABC \sim \Delta$ …………… $\sim \Delta$ ……………

(5) The perimeter of Δ ABC : the perimeter of Δ DBC = ……………

6. The area of the square = $\frac{1}{2}$ ……………

7. In Δ ABC , if $(AB)^2 = (BC)^2 + (AC)^2$, then m ($\angle$ ……………) = 90°

8. The area of rhombus is 20 cm^2, the length of one of its diagonals is 5 cm. , then the length of the other diagonal = ……………

9. If Δ ABC is right-angled at A and $\overline{AD} \perp \overline{BC}$, then $(AB)^2$ = …………… $\times$ ……………

10. In Δ ABC , if $(AC)^2 + (BC)^2 = (AB)^2$, then m ($\angle$ ……………) = 90°

11. If the point A $\in$ the line L , then the projection of the point A on the line L is ……………

12. A trapezium whose bases lengths are 8 cm. , 10 cm. , and its height is 5 cm. , then its area equals …………… cm^2.

13. The area of rhombus is 24 cm^2, the length of one of its diagonals is 8 cm. , then the length of other diagonal is ……………

14. The two polygons that are similar to third are ……………

Essay problems:

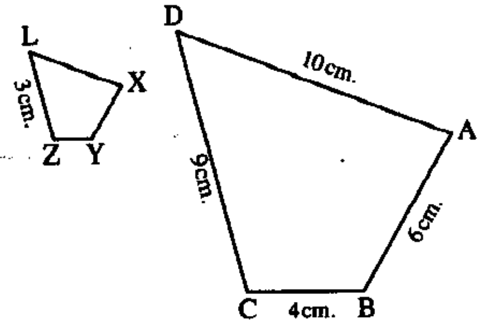
1. **In the opposite figure :**

The polygon ABCD ~ the polygon XYZL

, AB = 6 cm. , BC = 4 cm. , CD = 9 cm.

, DA = 10 cm. , ZL = 3 cm.

Find : The perimeter of the polygon XYZL



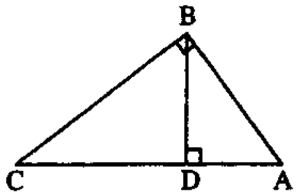
2. Determine the type of Δ ABC according to it's angles if AB = 3.5 cm. , BC = 2.5 cm. and AC = 3 cm.

3. **In the opposite figure :**

Δ ABC is right-angled at B , $\overline{BD} \perp \overline{AC}$

, AD = 9 cm. , and CD = 16 cm.

Find : (1) The length of $\overline{AB}$ (2) The length of $\overline{BD}$



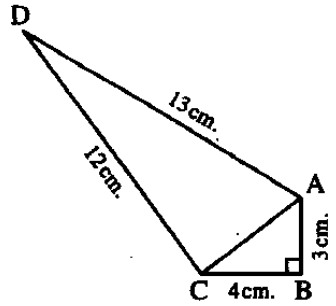
4. **In the opposite figure :**

BC = 4 cm. , AD = 13 cm. , AB = 3 cm.

, DC = 12 cm. , m ($\angle$ B) = 90°

(1) **Find :** The length of $\overline{AC}$

(2) **Prove that :** m ($\angle$ ACD) = 90°



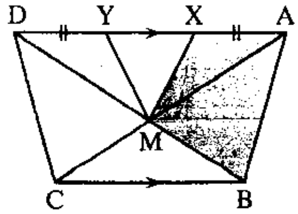
5. **✱ In the opposite figure :**

ABCD is a quadrilateral whose diagonals intersect at M

, $\overline{AD}$ // $\overline{BC}$, X $\in \overline{AD}$ and Y $\in \overline{AD}$

Such that : AX = DY

Prove that : The area of the figure ABMX = the area of the figure DCMY



6. Two similar polygons in which the ration between the lengths of two corresponding sides is 1 : 3 if the perimeter of the smaller is 20 cm. , find the perimeter of the greater.

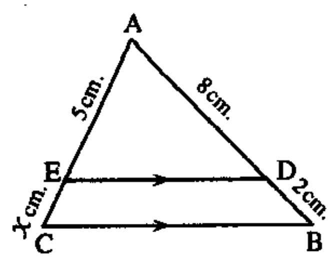
7. **In the opposite figure :**

ABC is a triangle in which $\overline{DE}$ // $\overline{BC}$, BD = 2 cm.

, AD = 8 cm. , AE = 5 cm. , CE = x cm.

(1) **Prove that :** Δ ADE ~ Δ ABC

(2) **Find the value of :** x

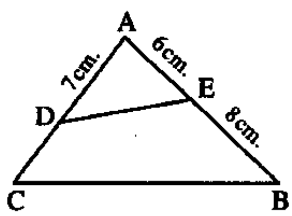


8. **In the opposite figure :**

If Δ ABC ~ Δ ADE , AE = 6 cm.

, AD = 7 cm. and BE = 8 cm.

Find : (1) DC (2) $\frac{DE}{BC}$

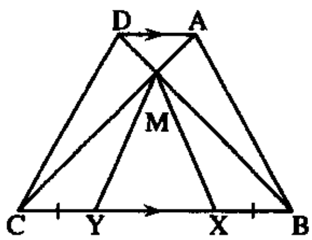


9. **✱ In the opposite figure :**

$\overline{AD}$ // $\overline{BC}$, $\overline{AC} \cap \overline{BD} = \{M\}$ and BX = CY

Prove that :

The area of the figure ABXM = the area of the figure DCYM



(11) $(\sqrt{3})^{-4-3+9} \times (\sqrt{2})^{-5+7} = (\sqrt{3})^2 \times (\sqrt{2})^2$

$= 3 \times 2 = 6$

(12) $\frac{2^4 \times \sqrt{3}^4}{3^4 \times \sqrt{2}^4} = \frac{2^4 \times 3^2}{3^4 \times 2^2} = 2^2 \times 3^{-2}$

$= 4 \times \frac{1}{9} = \frac{4}{9}$

(13) $\frac{3^{x-1} \times 2^{x+1}}{3^{x-1} \times 2^{x-1}} = 2^{x+1-x+1} = 2^2 = 4$

(14) $(\sqrt{3})^{+4} + \left(\frac{1}{\sqrt{3}}\right)^{-4} = 3^2 + 3^2 = 18$

(15) $\left(\frac{9 \times 8}{18}\right)^x = 4^x \quad \therefore 4^x = 4^3$

$\therefore \boxed{x = 3}$

(16) let the width $= x$, Length $= x+5$

$x(x+5) = 36$

$x^2 + 5x - 36 = 0$

$(x+9)(x-4) = 0$

$x = -9$ neglected

or $\boxed{x = 4}$

$\therefore$ the width $= 4$ cm, Length $= 9$ cm

$\therefore P = (4+9) \times 2 = 26$ cm

(17) $\frac{(2^2)^{x+1} \times (3^2)^{2-x}}{2^{2x} \times 3^{2x}} = \frac{2^{2x+2} \times 3^{4-2x}}{2^{2x} \times 3^{2x}}$

$= 2^{2x+2-2x} \times 3^{4-2x-2x}$

$= 2^2 \times 3^{4-4x} = 4 \times 3^{-4} = \frac{4}{81}$

(18) $3^{2x-3} = 3^5$

$\therefore 2x - 3 = 5 \quad \boxed{x = 4}$

No pain, No gain

(19) Let the number is x

$x^2 + x = 12$

$x^2 + x - 12 = 0$

$(x+4)(x-3) = 0$

$x = -4$ or $x = 3$

$\therefore$ the number is -4 or 3

(20) As No. (15)

Second: Geometry

(1) c	(2) b	(3) c	(4) b
(5) a	(6) b	(7) d	(8) b
(9) b	(10) d	(11) c	(12) b
(13) b	(14) d	(15) a	(16) d
(17) b	(18) b	(19) c	(20) a
(21) c	(22) c	(23) a	(24) d
(25) b	(26) a	(27) c	(28) b
(29) c	(30) b	(31) a	(32) a
(33) b	(34) c	(35) c	(36) b
(37) c	(38) b	(39) b	(40) c

Complete:

(1) the same area (2) $m(\angle C)$

(3) the point A (4) 3.5 cm

(5) 45 cm^2 (6) Proportional, equal in measure

(7) 6 cm (8) B (9) obtuse

(10) base and lie between two Parallel straight line

(11) a Point (12) >

(13) 32 (14) are equal in area

(15) base (16) an obtuse

(17) (a) the point D (b) $\overline{BD}$

(18) 30 (19) 120° (20) 40 cm^2

(21) Similar (22) 20 cm^2

(23) the same point or itself

(24) 24 (25) Proportional, Congruent

(26) 10 (27) 36cm (28) 3:5

(29) a point (30) 72 (31) obtuse

(32) 110°

Essay Problems:

① $\frac{3}{x} = \frac{4}{y} = \frac{5}{z} = \frac{12}{36}$

$x = \frac{3 \times 36}{12} = 9$ cm

$y = \frac{4 \times 36}{12} = 12$ cm

$z = \frac{5 \times 36}{12} = 15$ cm

② $\because \overline{CD} \parallel \overline{xB}$, $\overline{xB}$ common base

$\therefore A.\Delta CBx = A.\Delta DBx \rightarrow ①$

$\because \overline{BC} \parallel \overline{DY}$, $\overline{DY}$ common base

$\therefore A.\Delta CYD = A.\Delta BYD \rightarrow ②$

$\because A.\Delta CBx = A.\Delta CYD \rightarrow ③$

From ①, ②, ③ we get

$A.\Delta DBx = A.\Delta DBY$

But $\overline{DB}$ is a common base

$\therefore \overline{xy} \parallel \overline{DB}$.

③ In ΔADB, $\because m(\angle D) = 90°$

$\therefore (AB)^2 = (BD)^2 + (AD)^2 = 16 + 4 = 20$

In ΔADC, $\because m(\angle D) = 90°$

$\therefore (AC)^2 = (AD)^2 + (DC)^2 = 64 + 16 = 80$

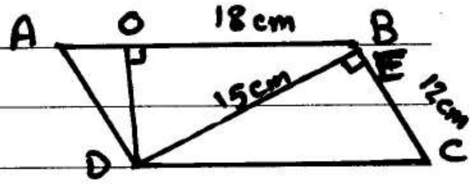
$(BC)^2 = 100$

$(AB)^2 + (AC)^2 = 20 + 80 = 100$

$\therefore (BC)^2 = (AB)^2 + (AC)^2$

$\therefore m(\angle BAC) = 90°$

④



Area = b × h = 12 × 15 = 180 cm^2

DO = 180 ÷ 18 = 10 cm

⑤ $\because m(\angle E) = 90°$, $\overline{EN} \perp \overline{DO}$

$\therefore (EN)^2 = NO \times ND = 9 \times 16$

$\therefore EN = 3 \times 4 =$ **12 cm**

$(ED)^2 = DN \times DO = 16 \times 25$

$\therefore ED = 4 \times 5 =$ **20cm**

$(EO)^2 = ON \times OD = 9 \times 25$

$\therefore EO = 3 \times 5 =$ **15 cm**

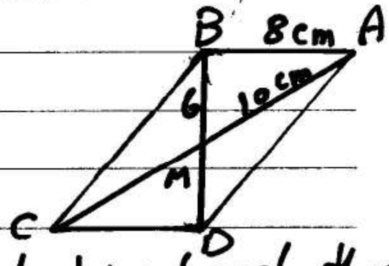
⑥ $AC \times BE = BC \times AO$

$10 \times BE = 7 \times 5$

$BE = 35 \div 10 =$ **3.5 cm**

Area $= \frac{1}{2} \times 7 \times 5 = 17.5$ cm^2

⑦



The diagonals bisect each other.

$\therefore AM = 10$ cm, $BM = 6$cm

$(AB)^2 + (BM)^2 = 64 + 36 = 100$

$(AM)^2 = 100$

$\therefore (AM)^2 = (AB)^2 + (BM)^2$

$\therefore$ **$m(\angle ABD) = 90°$**

$\therefore$ Area = b × h = 8 × 12 = 96 cm^2

⑧ $\because m(\angle A) = 90°$, $\overline{AD} \perp \overline{BC}$

$\therefore (AB)^2 = BD \times BC$

$\therefore 64 = BD \times 10$ $\therefore$ **BD = 6.4cm**

(9) In ΔABD, $\because m(\angle D)=90^\circ$

$\therefore (BD)^2=(AB)^2-(AD)^2=100$

$\therefore BD=\sqrt{100}=10cm$

In ΔADC, $\because m(\angle D)=90^\circ$

$\therefore (CD)^2=(AC)^2-(AD)^2=324$

$\therefore CD=\sqrt{324}=18$ cm

$\therefore BC=10+18=$ **28 cm**

Area $=\frac{1}{2}\times 28\times 24=336 cm^2$

(10) $\because EFD \sim \Delta ABC$

$\therefore \frac{AB}{EF}=\frac{BC}{FD}=\frac{AC}{ED}=\frac{P.\Delta ABC}{P.\Delta EFD}$

$\therefore \frac{4}{EF}=\frac{5}{FD}=\frac{6}{ED}=\frac{15}{60}$

$\therefore EF=\frac{4\times 60}{15}=16 cm$

$FD=\frac{5\times 60}{15}=20 cm$

$ED=\frac{6\times 60}{15}=24 cm$

(11) $\because \Delta ABC \sim \Delta AED$

$\therefore \frac{AB}{AE}=\frac{BC}{ED}=\frac{AC}{AD}$

$\therefore \frac{8}{4}=\frac{8}{ED}=\frac{AC}{3}$

$\therefore ED=\frac{4\times 8}{8}=$ **4 cm**

$AC=\frac{3\times 8}{4}=6 cm$

$\therefore EC=6-4=$ **2 cm**

(12) $\Delta\Delta$ ADE, ACB

in which $\begin{cases} m(\angle E)=m(\angle B) \\ \angle A \text{ is common} \end{cases}$

$\therefore \Delta ADE \sim \Delta ACB$

$\therefore \frac{AD}{AC}=\frac{AE}{AB}$ $\quad \therefore \frac{3}{AC}=\frac{4.5}{9}$

$\therefore AC=\frac{3\times 9}{4.5}=6 cm$ $\quad$ **$\therefore EC=1.5 cm$**

(13) In ΔABC, $\because \overline{AD}$ is a median

$\therefore A.\Delta ABD=A.\Delta ACD \rightarrow (1)$

In ΔEBC, $\because \overline{ED}$ is a median

$\therefore A.\Delta EBD=A.\Delta ECD \rightarrow (2)$

by subtracting (1) − (2)

$\therefore A.\Delta ABE=A.\Delta ACE$.

(14) In ΔABD, $\because m(\angle B)=90^\circ$

$\therefore (BD)^2=(AD)^2-(AB)^2=225$

$\therefore (BD)^2=\sqrt{225}=$ **15 cm**

In ΔBCD

$(BD)^2=225$

$(BC)^2+(DC)^2=81+144=225$

$\therefore (BD)^2=(BC)^2+(DC)^2$

$\therefore m(\angle C)=90^\circ$

(15) Area $=\frac{5+7}{2}\times 4=24 cm^2$

(16) $(BD)^2=(BC)^2+(DC)^2=625$

$\therefore BD=\sqrt{625}=$ **25cm**

$(AD)^2=(BD)^2-(AB)^2=400$

$\therefore AD=\sqrt{400}=$ **20 cm**

The projection of $\overline{AB}$ on $\overleftrightarrow{BD}$ is $\overline{EB}$

$(AB)^2=EB\times DB$

$225=EB\times 25$

$EB=9$ cm

(17) $\frac{3}{5}=\frac{x}{60}$

$x=\frac{3\times 60}{5}=36$ cm

(18) $(AC)^2 = (AB)^2 + (BC)^2 = 9 + 16 = 25$

$\therefore AC = \sqrt{25} = \boxed{5 \text{ cm}}$

$(AD)^2 = 169$

$(AC)^2 + (DC)^2 = 25 + 144 = 169$

$\therefore (AD)^2 = (AC)^2 + (DC)^2$

$\therefore m(\measuredangle ACD) = 90^\circ$

(19) $(BC)^2 = 8^2 = 64 \text{ cm}^2$

$(AB)^2 + (AC)^2 = 36 + 16 = 52 \text{ cm}^2$

$\therefore (BC)^2 > (AB)^2 + (AC)^2$

$\therefore \triangle ABC$ is obtuse-angled.

(20) $\triangle AED \sim \triangle CEB$:المطلوب إثبات

$\triangle\triangle AED, CEB$

in which $\begin{cases} m(\angle A) = m(\angle C) \text{ Alt.} \\ m(\angle D) = m(\angle B) \text{ Alt.} \end{cases}$

$\therefore \triangle AED \sim \triangle CEB$

$\therefore \frac{AE}{CE} = \frac{ED}{EB} = \frac{AD}{CB} = \frac{P.\triangle AED}{P.\triangle CEB}$

$\frac{4}{8} = \frac{9}{P.\triangle CEB}$

$\therefore P.\triangle EBC = \frac{8 \times 9}{4} = 18 \text{ cm}$

(21) $\because m(\angle B) = 90^\circ$, $\overline{BD} \perp \overline{AC}$

$\therefore (BD)^2 = DA \times DC = 1.8 \times 3.2$

$\therefore BD = \sqrt{1.8 \times 3.2} = \boxed{2.4 \text{ cm}}$

$(AB)^2 = AD \times AC = 1.8 \times 5 = 9$

$\therefore AB = \sqrt{9} = \boxed{3 \text{ cm}}$

(22) $\because A.\triangle ABE = A.\triangle ACD$

by subtracting $A.\triangle ADE$

$\therefore A.\triangle DEB = A.\triangle DEC$

But $\overline{DE}$ is a common base

$\therefore \overline{DE} \parallel \overline{BC}$

(23) $\because \triangle AXY \sim \triangle ABC$

$\therefore \frac{AX}{AB} = \frac{XY}{BC} = \frac{AY}{AC}$

$\therefore \frac{7}{14} = \frac{XY}{BC} = \frac{6}{AC}$

$\therefore AC = \frac{6 \times 14}{7} = 12 \text{ cm}$

$\therefore XC = 12 - 7 = \boxed{5 \text{ cm}}$

$\frac{XY}{BC} = \frac{7}{14} = \boxed{\frac{1}{2}}$

(24) $\frac{2x + 3x}{2} = 30$

$5x = 60 \Rightarrow x = 12$

$\therefore$ the 2 bases are: 24 cm, 36 cm

Area $= 30 \times 24 = 720 \text{ cm}^2$

(25) $\because \overline{AD} \parallel \overline{BC}$ and $\overline{BC}$ common

$\therefore A.\triangle ABC = A.\triangle DBC$

by subtracting $A.\triangle MBC$

$\therefore A.\triangle AMB = A.\triangle DMC \rightarrow (1)$

$\because \overline{MD}$ is a median in $\triangle EMC$

$\therefore A.\triangle MDE = A.\triangle DMC \rightarrow (2)$

From (1), (2) we get

$A.\triangle AMB = A.\triangle MDE.$

(26) $\because m(\angle A) = 90^\circ$, $\overline{AD} \perp \overline{BC}$

$\therefore (AD)^2 = DC \times DB = 9 \times 16$

$\therefore AD = 3 \times 4 = \boxed{12 \text{ cm}}$

$\because (AB)^2 = BD \times BC = 9 \times 25$

$\therefore AB = 3 \times 5 = \boxed{15 \text{ cm}}$

$\because (AC)^2 = DC \times BC = 16 \times 25$

$\therefore AC = 4 \times 5 = \boxed{20 \text{ cm}}$

(27) In Δ BCD, $\because m(\angle C) = 90^\circ$

$\therefore (BD)^2 = (BC)^2 + (DC)^2 = 100$

$\therefore BD = 10$ cm

$\because AB = AD$, E is midpoint of $\overline{BD}$

$\therefore \overline{AE} \perp \overline{BD}$

In Δ ABE, $\because m(\angle E) = 90^\circ$

$\therefore (AE)^2 = (AB)^2 - (BE)^2 = 169 - 25 = 144$

$\therefore AE = \sqrt{144} = 12$ cm

$\therefore$ A. Δ BCD $= \frac{1}{2} \times 8 \times 6 = 24$ cm^2

A. Δ ABD $= \frac{1}{2} \times 10 \times 12 = 60$ cm^2

$\therefore$ A. of ABCD $= 24 + 60 = 84$ cm^2

(28) BC = 20cm

2AD = 20 $\therefore$ AD = 10cm

middle base $= \frac{20+10}{2} = 15$ cm

$\therefore h = 180 \div 15 = 12$ cm

(29) As No. (18)

Algebra

Essay

(21) • $(x^3+8)+(2x^2+4x)$

$= (x+2)(x^2-2x+4) + 2x(x+2)$

$= (x+2)(x^2 - 2x + 4 + 2x)$

$= (x+2)(x^2+4)$

• $(5a^2-1)(5a^2+1)$

• $(x-3)(x^2+3x+9)$

• $(y-8)(y+1)$

• $(5x-3)^2$

(22) $\left(\frac{3}{5}\right)^{x-2} = \left(\frac{3}{5}\right)^3$

$\therefore x - 2 = 3$ $\boxed{\therefore x = 5}$

(23) $\left(\frac{8\times 9}{18}\right)^x = 64$

$4^x = 4^3$ $\therefore \boxed{x = 3}$

(24) $\left(\sqrt{\frac{2}{3}}\right)^x = \left(\sqrt{\frac{2}{3}}\right)^4$

$\therefore \boxed{x = 4}$

$\therefore \left(\frac{2}{3}\right)^{x-1} = \left(\frac{2}{3}\right)^3 = \frac{8}{27}$

(25) S.S. $= \{0, -4, \frac{1}{2}\}$

(26) $\left(\frac{2}{5}\right)^{2x-1} = \left(\frac{2}{5}\right)^3$

$\therefore 2x - 1 = 3$

$\therefore \boxed{x = 2}$

(27) $x^2 + 3x = 28$

$x^2 + 3x - 28 = 0$

$(x+7)(x-4) = 0$

$x = -7$ neglected

or $x = 4$

$\therefore$ the number is 4

(28) $x^2 - 8x + 15 = 0$

$(x-3)(x-5) = 0$

$\therefore$ S.S. $= \{3, 5\}$

(29) $\frac{(27)^{-1} \times 27^x \times 8^x}{(2\sqrt{3})^{2x} \times (3\sqrt{2})^{2x}}$

$= (27)^{-1} \times \left(\frac{27 \times 8}{12 \times 18}\right)^x = \frac{1}{27} \times 1 = \frac{1}{27}$

(30) $\left(\frac{4\times 36}{16 \times 9}\right)^n = 1^n = 1$

Geometry

Essay:

(30) $\because ABCD \sim XYZL$

$\therefore \frac{AB}{XY} = \frac{BC}{YZ} = \frac{CD}{ZL} = \frac{AD}{XL} = \frac{P1}{P2}$

$\therefore \frac{9}{3} = \frac{29}{P2}$

$P = \frac{3 \times 29}{9} = 9\frac{2}{3}$ cm

(31) $(AB)^2 = (3.5)^2 = 12.25$

$(BC)^2 + (AC)^2 = 6.25 + 9 = 15.25$

$\therefore (AB)^2 < (BC)^2 + (AC)^2$

$\therefore \triangle ABC$ is an acute-angled

(32) $\because m(\angle B) = 90°$, $\overline{BD} \perp \overline{AC}$

$\therefore (AB)^2 = AD \times AC = 9 \times 25$

$\therefore AB = 3 \times 5 =$ **15 cm**

$\therefore (BD)^2 = AD \times CD = 9 \times 16$

$\therefore BD = 3 \times 4 =$ **12 cm**

(33) $(AC)^2 = (AB)^2 + (BC)^2 = 9 + 16 = 25$

$\therefore AC = 5$ cm

$(AD)^2 = 169$

$(AC)^2 + (DC)^2 = 144 + 25 = 169$

$\therefore (AD)^2 = (AC)^2 + (DC)^2$

$\therefore m(\angle ACD) = 90°$

(34) $\because \overline{AD} // \overline{BC}$, $\overline{BC}$ common base

$\therefore A.\triangle ABC = A.\triangle DBC$

by subtracting $A.\triangle MBC$

$\therefore$ A. of $\triangle AMB = A.\triangle DMC \to (1)$

$\because AX = DY$, M common vertex

$\therefore A.\triangle AXM = A.\triangle DYM \to (2)$

From (1), (2) we get

A. of ABMX = A. of DCMY.

(35) $\frac{1}{3} = \frac{20}{x}$

$x = \frac{3 \times 20}{1} = 60$ cm

(36) $\triangle\triangle ADE, ABC$

in which $\begin{cases} m(\angle D) = m(\angle B) \text{ corres.} \\ m(\angle E) = m(\angle C) \text{ corres.} \\ \angle A \text{ common} \end{cases}$

$\therefore \triangle ADE \sim \triangle ABC$

$\therefore \frac{AD}{AB} = \frac{AE}{AC}$ $\therefore \frac{8}{10} = \frac{5}{AC}$

$\therefore AC = \frac{5 \times 10}{8} = 6.25$ cm

$\therefore x = 6.25 - 5 =$ **1.25 cm**

(37) $\because \triangle ABC \sim \triangle ADE$

$\therefore \frac{AB}{AD} = \frac{AC}{AE} = \frac{BC}{DE}$ $\therefore \frac{14}{7} = \frac{AC}{6} = \frac{BC}{DE}$

$\therefore AC = \frac{6 \times 14}{7} = 12$ cm

$\therefore DC = 12 - 7 =$ **5cm**

$\therefore \frac{DE}{BC} = \frac{7}{14} = \frac{1}{2}$

(38) $\because \overline{AD} // \overline{BC}$, $\overline{AD}$ common base

$\therefore A.\triangle ADB = A.\triangle ADC$

by subtracting $A.\triangle ADM$

$\therefore A.\triangle AMB = A.\triangle DMC \to (1)$

$\because xB = CY$, M is common vertex

$\therefore A.\triangle MBx = A.\triangle MCY \to (2)$

From (1), (2) we get

A. ABXM = A. DCYM.

حمل الآن

مجانا وحصريا

المراجعة رقم (4)

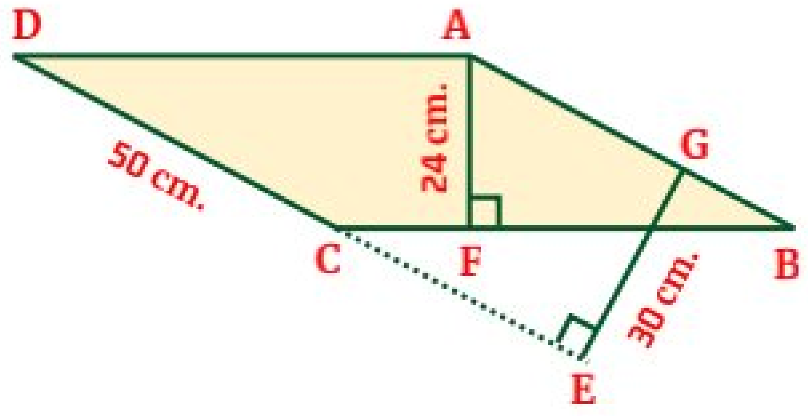
الترم الثانى

1 AREAS



1 **In the opposite figure :**

ABCD is a parallelogram in which DC = 50 cm. , $E \in \overrightarrow{DC}$ where $\overrightarrow{GE} \perp \overrightarrow{DC}$, $\overline{AF} \perp \overline{BC}$, AF = 24 cm. , GE = 30 cm. , **Find :**



[1] The area of the parallelogram

[2] the length of $\overline{AD}$

SOLUTION

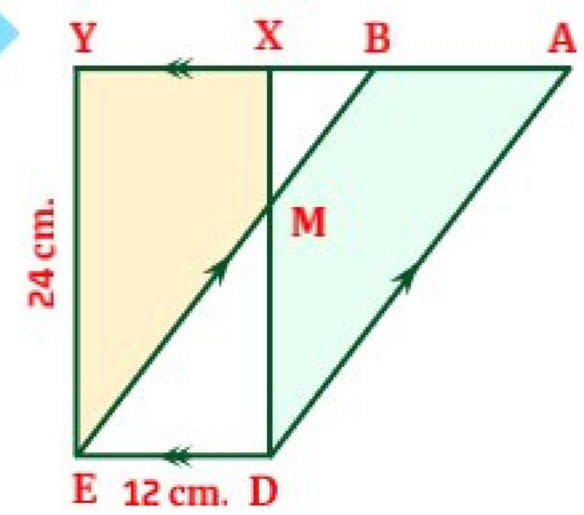
[1] the area of ▱ = AB × GE = 50 × 30 = 1500 cm^2.

[2] ∵ the area of ▱ = BC × AF = 24 BC = 1500 cm^2.

∴ BC = 1500 ÷ 24 = 62.5 cm.

2 **In the opposite figure :**

$\overleftrightarrow{AB}$ // $\overleftrightarrow{DE}$, X and Y $\in \overleftrightarrow{AB}$, XDEY is a rectangle and $\overline{AD}$ // $\overline{BE}$



[1] **Prove that :** the area of the figure ABMD = the area of the figure XYEM

[2] **Find :** the area of the figure ABED

[3] If : AD = 30 cm. **Find :** the length of the perpendicular from B to $\overline{AD}$.

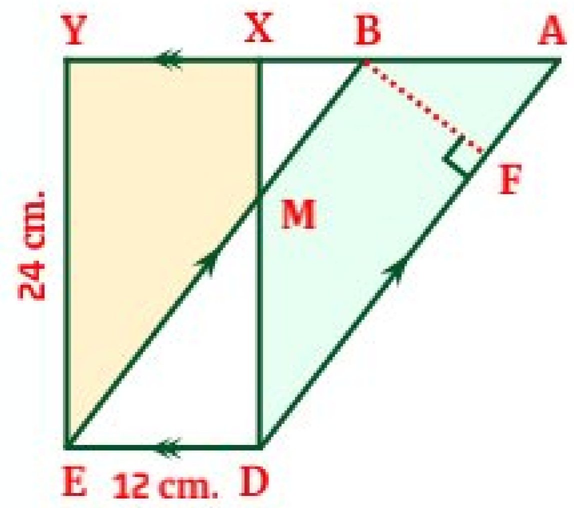
SOLUTION

[1] ∵ $\overline{AD}$ // $\overline{BE}$ and $\overline{AB}$ // $\overline{DE}$ ∴ ABED is a parallelogram.

▱ ABED and ▭ XYED in which { $\overline{DE}$ is a common base , $\overline{DE}$ // $\overleftrightarrow{AY}$ }

∴ The area of ▱ ABED = the area of ▭ XYED Subtracting the area of △ MED from the two sides

∴ the area of the figure ABMD = the area of the figure XYEM



[2] ∵ The area of ▭ XYED = length × width = 24 × 12 = 288 cm^2.

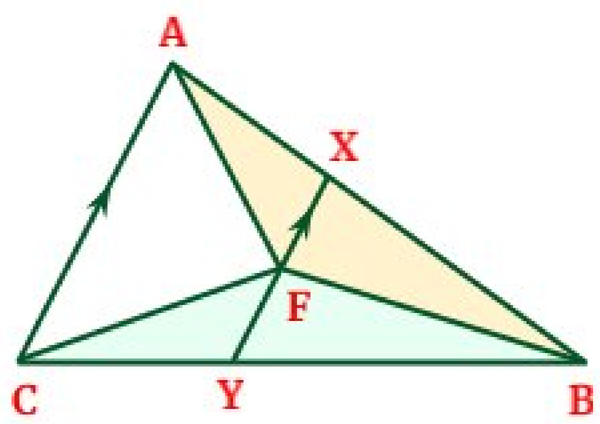
∴ The area of ▱ ABED = 288 cm^2.

[3] The area of ▱ ABED = AD × BF

∴ 30 × BF = 288 ∴ BF = 288 ÷ 30 = 9.6 cm.

3 **In the opposite figure :**

$\overline{AC}$ // $\overline{XY}$ and F is the midpoint of $\overline{XY}$.



Prove that : the area of △ ABF = the area of △ CBF

SOLUTION

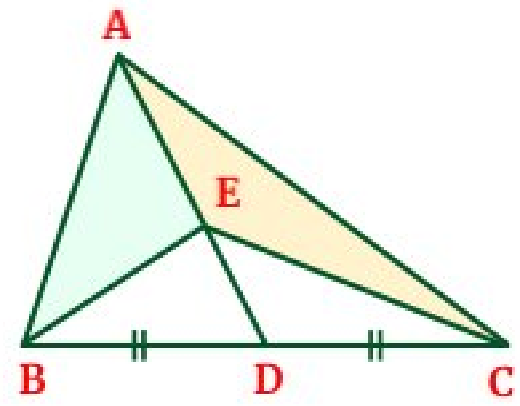
In △ AFX and △ CFY { FX = FY , $\overline{XY}$ // $\overline{AC}$ and F ∈ $\overline{XY}$ }

∴ the area of △ AFX = the area of △ CFY ①

∵ $\overline{BF}$ is a midpoint in △ BXY ∴ the area of △ BFX = the area of △ BFY ②

Adding ① and ② we deduce : the area of △ ABF = the area of △ CBF

4 **In the opposite figure :**



ABC is a triangle with a median $\overline{AD}$, E ∈ $\overline{AD}$, draw $\overline{BE}$ and $\overline{CE}$

Prove that : The area of △ ABE = the area of △ ACE

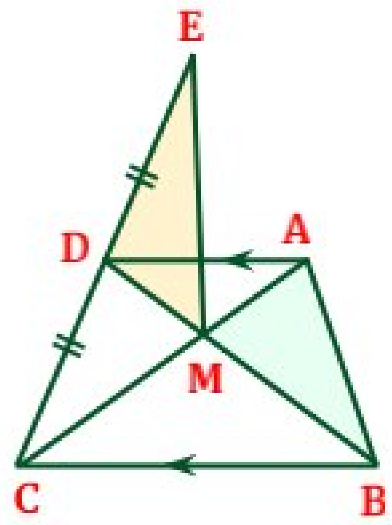
SOLUTION

∵ $\overline{AD}$ is a midpoint in △ ABC ∴ the area of △ ABD = the area of △ ACD ①

∵ $\overline{ED}$ is a midpoint in △ EBC ∴ the area of △ EBD = the area of △ ECD ②

Subtracting ② from ① we deduce : the area of △ ABE = the area of △ ACE

5 **In the opposite figure :**



$\overline{AD}$ // $\overline{BC}$ and $\overline{AC}$ ∩ $\overline{BD}$ = { M } , D is a midpoint of $\overline{EC}$

Prove that : The area of △ MDE = the area of △ AMB

SOLUTION

In △ ABC and △ DBC { $\overline{CB}$ is a common base , $\overline{AD}$ // $\overleftrightarrow{BC}$ }

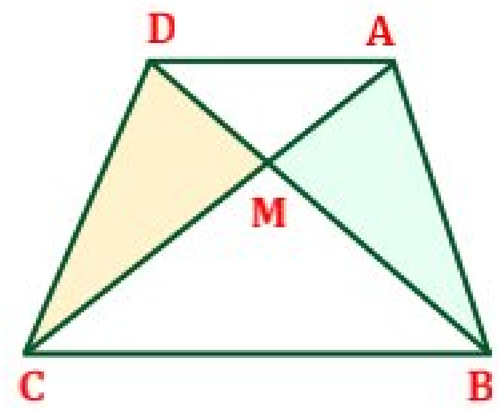
∴ the area of △ ABC = the area of △ DBC Subtracting the area of △ MCB from the two sides

∴ the area of △ AMB = the area of △ DMC ①

∵ $\overline{MD}$ is a midpoint in △ CME ∴ the area of △ EMD = the area of △ DMC ②

From ① and ② we deduce : The area of △ MDE = the area of △ AMB

6 **In the opposite figure :**



ABCD is a quadrilateral , its diagonals intersect at M

, and the area of △ ABM = the area of △ DCM

Prove that : $\overline{AD}$ // $\overline{BC}$

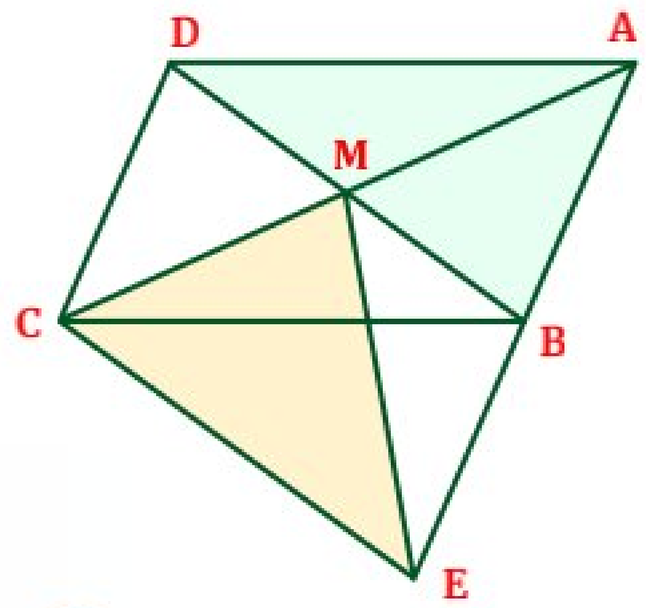
SOLUTION

∵ the area of △ ABM = the area of △ DCM Adding the area of △ MCB to both sides

∴ the area of △ ABC = the area of △ DBC , but they have the base $\overline{BC}$ and on the same side of it.

∴ $\overline{AD}$ // $\overline{BC}$

7 **In the opposite figure :**



ABCD and BECD are two parallelogram , where $\overline{AC}$ ∩ $\overline{BD}$ = { M }

Prove that : the area of △ ABD = the area of △ MEC

SOLUTION

In ▱▱ ABCD and BECD { $\overline{CD}$ is a common base , $\overline{CD}$ // $\overline{AB}$, E ∈ $\overrightarrow{AB}$ }

∴ the area of ▱ ABCD = the area of ▱ BECD ①

In △ ABD and ▱ ABCD { $\overline{AB}$ is a common base , $\overline{AB}$ // $\overline{CD}$ }

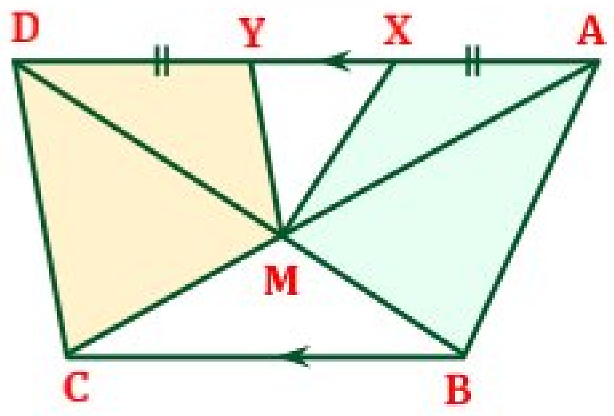
∴ the area of △ ABD = $\frac{1}{2}$ the area of ▱ ABCD ②

In $\triangle$ EMC and $\square$ BECD { $\overline{CE}$ is a common base , $\overline{CE}$ // $\overline{BD}$, M ∈ $\overline{BD}$ }

∴ the area of $\triangle$ ABD = $\frac{1}{2}$ the area of $\square$ BECD ③

From ① , ② and ③ we deduce : the area of $\triangle$ ABD = the area of $\triangle$ MEC

8 **In the opposite figure :**



ABCD is a quadrilateral whose diagonals intersect at M , $\overline{AD}$ // $\overline{BC}$

X and Y ∈ $\overline{AD}$ such that AX = DY.

Prove that : the area of the figure ABMX = the area of the figure DCMY

SOLUTION

In $\triangle$ ABC and $\triangle$ DBC { $\overline{CB}$ is a common base , $\overline{AD}$ // $\overleftrightarrow{BC}$ }

∴ the area of $\triangle$ ABC = the area of $\triangle$ DBC Subtracting the area of $\triangle$ MCB from the two sides

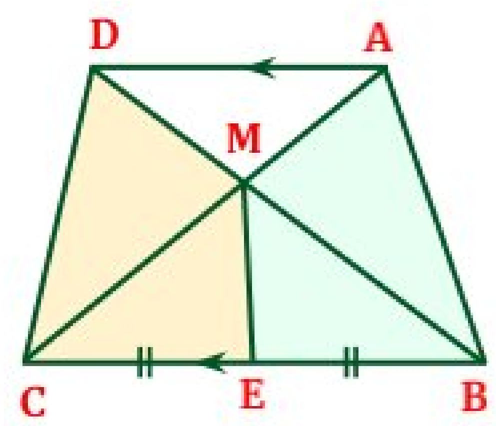
∴ the area of $\triangle$ AMB = the area of $\triangle$ DMC ①

In $\triangle$ $\triangle$ AMX and DMY { DY = AX and M is a common vertex }

∴ the area of $\triangle$ AMX = the area of $\triangle$ DMY ②

Adding ① and ② we deduce : the area of the figure ABMX = the area of the figure DCMY

9 **In the opposite figure :**



$\overline{AD}$ // $\overline{BC}$, $\overline{AC}$ ∩ $\overline{BD}$ = { M } , E is a midpoint of $\overline{BC}$

Prove that : the area of the figure ABEM = the area of the figure DMEC

SOLUTION

In $\triangle$ ABC and $\triangle$ DBC { $\overline{CB}$ is a common base , $\overline{AD}$ // $\overleftrightarrow{BC}$ }

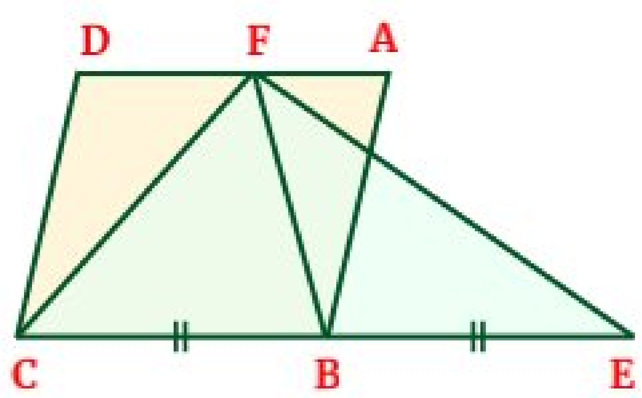
∴ the area of $\triangle$ ABC = the area of $\triangle$ DBC Subtracting the area of $\triangle$ MCB from the two sides

∴ the area of $\triangle$ AMB = the area of $\triangle$ DMC ①

∵ $\overline{ME}$ is a midpoint in $\triangle$ MBC ∴ the area of $\triangle$ MEB = the area of $\triangle$ MEC ②

Adding ① and ② we deduce : the area of the figure ABEM = the area of the figure DMEC

10 **In the opposite figure :**



ABCD is a parallelogram , E ∈ $\overrightarrow{CB}$, where BC = BE

Prove that : The area of $\triangle$ EFC = the area of $\square$ ABCD

SOLUTION

In $\triangle$ FBC and $\square$ ABCD : { $\overline{CB}$ is a common base , $\overline{CB}$ // $\overline{AD}$, F ∈ $\overline{AD}$ }

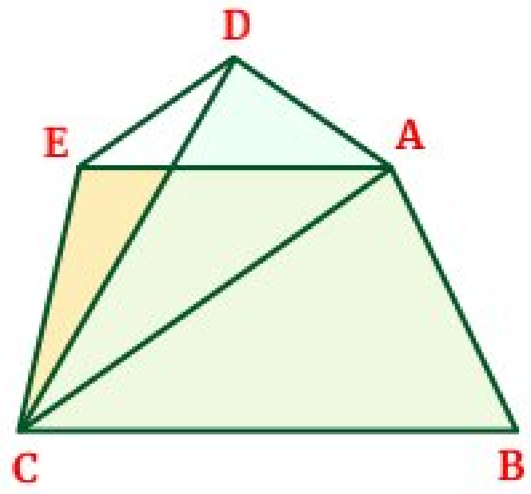
∴ The area of $\triangle$ FBC = $\frac{1}{2}$ the area of $\square$ ABCD ①

In $\triangle$ $\triangle$ FCB and FBE { CB = BE and F is a common vertex }

∴ The area of $\triangle$ FCB = the area of $\triangle$ FBE ②

From ① and ② we deduce : The area of $\triangle$ EFC = the area of $\square$ ABCD

11 **In the opposite figure :**



The area of the figure ABCD = the area of the figure ABCE

Prove that : $\overline{DE} \parallel \overline{AC}$

▶ SOLUTION

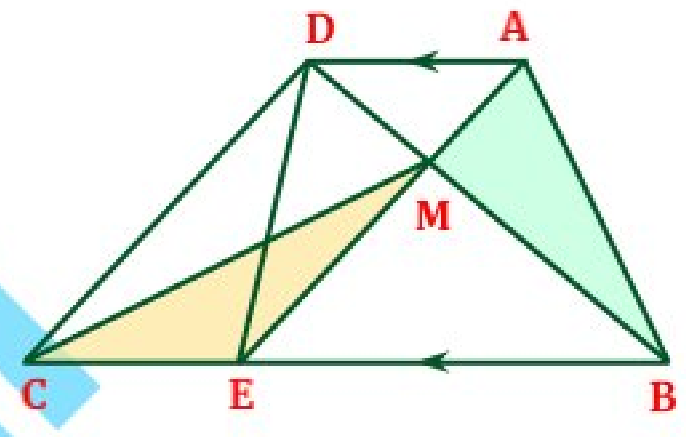
∵ The area of the figure ABCD = the area of the figure ABCE

Subtracting the area of $\triangle$ ABC from the two sides

∴ The area of $\triangle$ ACD = the area of $\triangle$ ACE , but they have the base $\overline{AC}$ and on the same side of it.

∴ $\overline{DE} \parallel \overline{AC}$

12 **In the opposite figure :**



$\overline{AD} \parallel \overline{BC}$, $\overline{AE} \cap \overline{BD} = \{ M \}$, the area of $\triangle$ AMB = the area of $\triangle$ EMC

Prove that : $\overline{ME} \parallel \overline{DC}$

▶ SOLUTION

In $\triangle$ ABE and $\triangle$ DBE { $\overline{EB}$ is a common base , $\overline{AD} \parallel \overline{EB}$ }

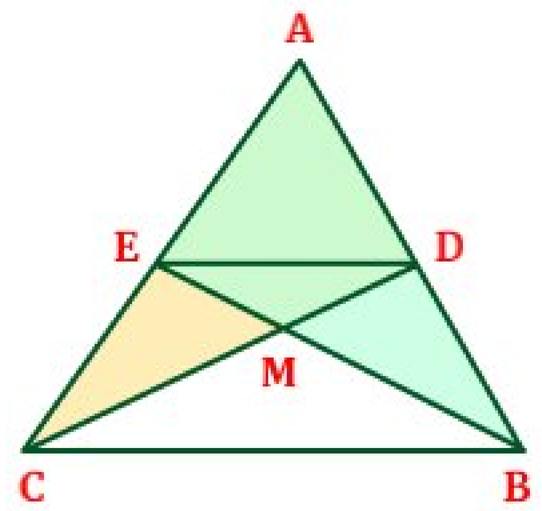
∴ the area of $\triangle$ ABE = the area of $\triangle$ DBE   Subtracting the area of $\triangle$ MEB from the two sides

∴ the area of $\triangle$ AMB = the area of $\triangle$ DME   , but the area of $\triangle$ AMB = the area of $\triangle$ EMC (given)

∴ the area of $\triangle$ DME = the area of $\triangle$ EMC   , but they have the base $\overline{ME}$ and on the same side of it.

∴ $\overline{ME} \parallel \overline{DC}$

13 **In the opposite figure :**



If the area of $\triangle$ ADC = the area of $\triangle$ AEB

Prove that : $\overline{DE} \parallel \overline{BC}$

▶ SOLUTION

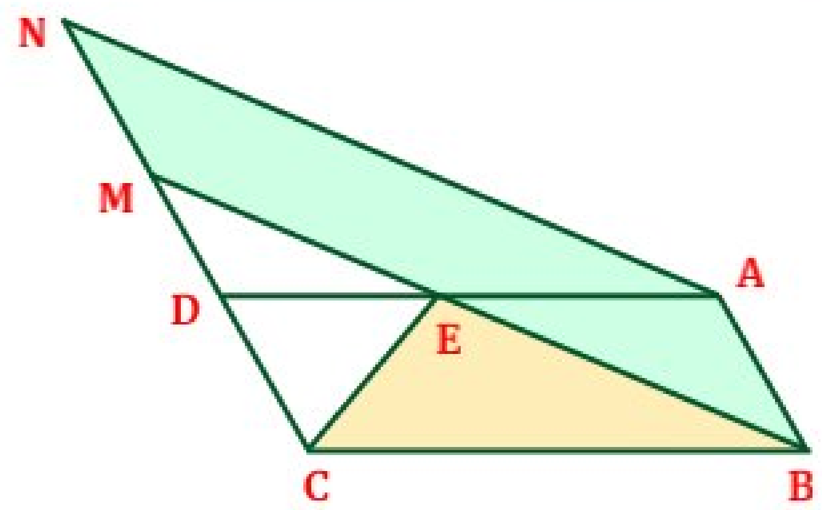
∵ the area of $\triangle$ ADC = the area of $\triangle$ AEB

Subtracting the area of $\triangle$ ADE from the two sides

∴ The area of $\triangle$ DBE = the area of $\triangle$ DCE , but they have the base $\overline{ED}$ and on the same side of it.

∴ $\overline{DE} \parallel \overline{BC}$

14 **In the opposite figure :**



ABCD and ABMN are two parallelogram , M ∈ $\overrightarrow{CD}$

Prove that : The area of $\triangle$ EBC = $\frac{1}{2}$ the area of ▱ ABMN

▶ SOLUTION

In ▱ ▱ ABCD and ABMN { $\overline{AB}$ is a common base , $\overline{AB} \parallel \overline{CD}$, M , N ∈ $\overrightarrow{CD}$ }

∴ The area of ▱ ABCD = The area of ▱ ABMN   ①

In $\triangle$ EBC and ▱ ABCD : { $\overline{CB}$ is a common base , $\overline{CB} \parallel \overline{AD}$, F ∈ $\overline{AD}$ }

The area of △ EBC = $\frac{1}{2}$ the area of ▱ ABCD ②

From ① and ② we deduce : The area of △ EFC = the area of ▱ ABCD

15 The area of a trapezium is 88 cm^2. , its height is 8 cm. and the length of one of the two parallel bases is 10 cm. , Find the length of the other base.

SOLUTION

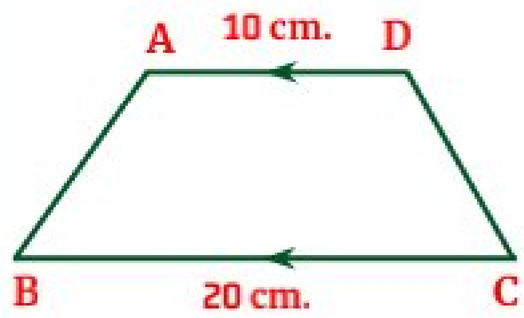
Let the length of other base = x cm.

∵ The area of the trapezium = $\frac{1}{2}(10 + x) \times 8$ ∴ $88 = 4(10 + x)$ (divide by 4)

∴ $x + 10 = 22$ ∴ $x = 22 - 10 = 12$ cm.

16 ABCD is a trapezium in which : $\overline{AD} \parallel \overline{BC}$, if BC = 2 AD = 20 cm. and its area = 180 cm^2.
Find its height.

SOLUTION



∵ 2 AD = 20 ∴ AD = 20 ÷ 2 = 10 cm.

∵ The area of the trapezium = $\frac{1}{2}(10 + 20) \times h$ ∴ 180 = 15 h (divide by 15)

∴ h = 180 ÷ 15 = 12 cm.

17 The area of a trapezium is 180 cm^2. , its height is 9 cm. Find the lengths of its parallel bases if the ratio between their lengths is 3 : 5.

SOLUTION

Let the length of the two bases are 3 x and 5 x

∵ The area of the trapezium = $\frac{1}{2}(3x + 5x) \times 9$ ∴ $180 = \frac{1}{2}(8x) \times 9$

∴ 180 = 36 x ∴ x = 180 ÷ 36 = 5

∴ The two bases are 15 cm. and 25 cm.

18 A rhombus with diagonal lengths are 12 cm. and 10 cm. and its height 8 cm. Find its perimeter.

SOLUTION

The area of the Rhombus = $\frac{1}{2}$ × first diagonal × second diagonal = $\frac{1}{2} \times 12 \times 10 = 60$ cm^2.

Side length = Area ÷ height = 60 ÷ 8 = 7.5 cm.

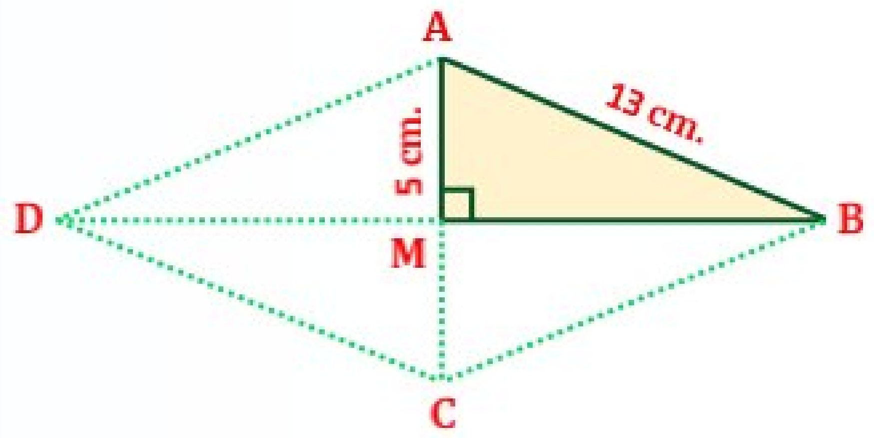
The perimeter = side length × 4 = 7.5 × 4 = 30 cm.

19 Find the area of the rhombus whose perimeter is 52 cm. and the length of one of its diagonals is 10 cm.

SOLUTION

Side length = Perimeter ÷ 4 = 52 ÷ 4 = 13 cm.

By drawing the rhombus ABCD and its two diagonal intersect at M we deduce :



$\because$ $\triangle$ AMB is a right-angled triangle at M , AM = 10 ÷ 2 = 5 cm.

$\therefore$ $(MB)^2 = (13)^2 - (5)^2 = 169 - 25 = 144$ $\therefore$ MB = 12 cm.

$\therefore$ DB = 12 × 2 = 24 cm.

$\therefore$ the area of the rhombus $= \frac{1}{2} \times BD \times AC = \frac{1}{2} \times 24 \times 10 = 120$ cm^2.

20 A peace of land has the shape of a trapezium whose area is 4000 m^2, the lengths of the two parallel bases and its height of ratio 3 : 2 : 4 , respectively , find the length of its middle base.

SOLUTION

Let the length of the two bases are 3 x , 2 x and its height 4 x

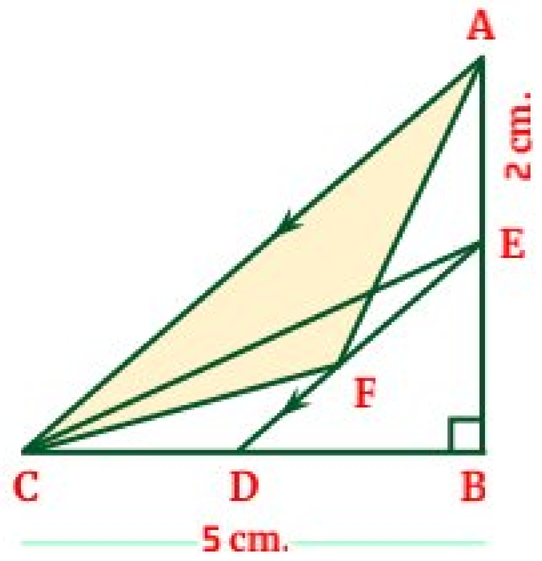
$\because$ The area of the trapezium $= \frac{1}{2}(3x + 2x) \times 4x$ $\therefore$ $4000 = 5x \times 2x$

$\therefore$ $4000 = 10x^2$ $\therefore$ $x^2 = 4000 \div 10 = 400$ $\therefore$ $x = 20$

$\therefore$ The two bases are 60 cm. and 40 cm.

$\therefore$ The length of the middle base $= \frac{1}{2}(60 + 40) = 50$ cm.

21 **In the opposite figure :**



ABC is a right-angled triangle at B in which : BC = 5 cm. , E ∈ $\overline{AB}$, D ∈ $\overline{BC}$

Where $\overline{ED}$ // $\overline{AC}$ and AE = 2 cm.

Find : The area of $\triangle$ AFC.

SOLUTION

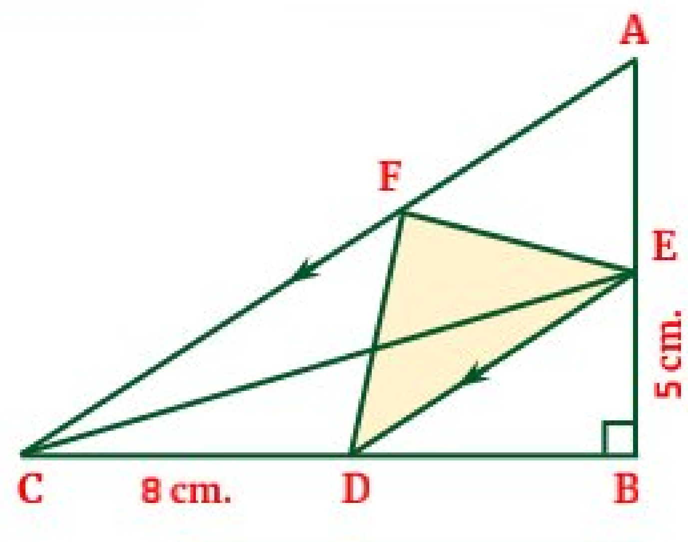
In $\triangle$ ACE

$\because$ $\overline{CB} \perp \overrightarrow{AE}$ $\therefore$ its area $= \frac{1}{2} \times AE \times CB = \frac{1}{2} \times 2 \times 5 = 5$ cm^2.

In $\triangle$ AEC and $\triangle$ AFC { $\overline{AC}$ is a common base , $\overline{AC}$ // $\overline{ED}$, F ∈ $\overline{ED}$ }

$\therefore$ The area of $\triangle$ DBE = the area of $\triangle$ DCE = 5 cm^2.

22 **In the opposite figure :**



EBC is a right-angled triangle at B in which : EB = 5 cm. , D ∈ $\overline{CB}$, E ∈ $\overline{AB}$

Where $\overline{ED}$ // $\overline{AC}$ and CD = 5 cm.

Find : The area of $\triangle$ AFC.

SOLUTION

In $\triangle$ ECD

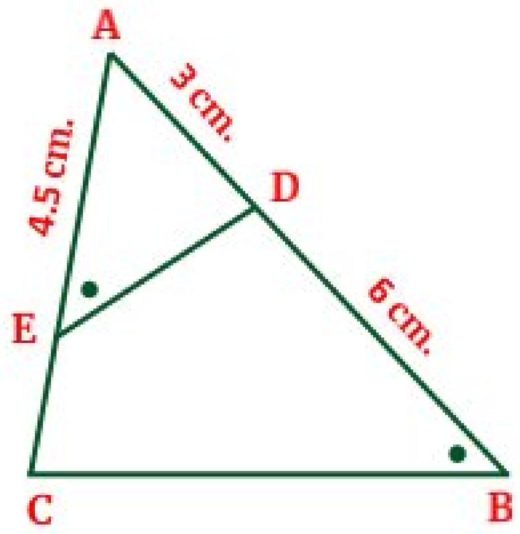
$\because$ $\overline{EB} \perp \overrightarrow{CD}$ $\therefore$ its area $= \frac{1}{2} \times CD \times EB = \frac{1}{2} \times 8 \times 5 = 20$ cm^2.

In $\triangle$ EFD and $\triangle$ ECD { $\overline{ED}$ is a common base , $\overline{AC}$ // $\overline{ED}$, F ∈ $\overline{AC}$ }

$\therefore$ The area of $\triangle$ EFD = the area of $\triangle$ ECD = 20 cm^2.



1 In the opposite figure :



m (∠ AED) = m (∠ B) , AD = 3 cm. , AE = 4.5 cm. and BD = 6 cm.

1 Prove that : △ ADE ~ △ ACB

2 Find : the length of $\overline{EC}$

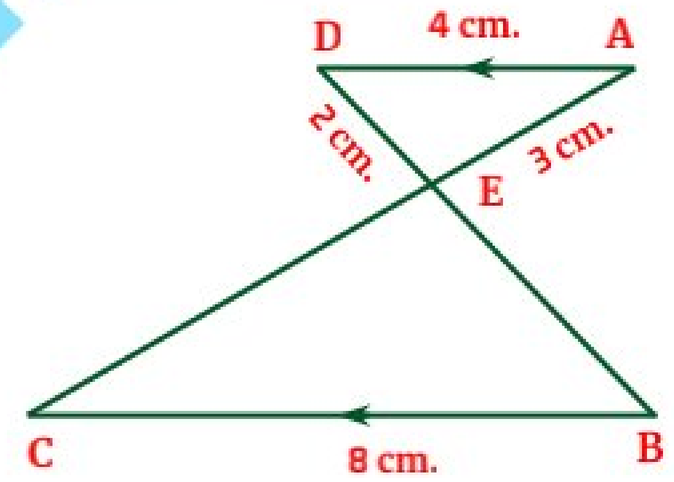
SOLUTION

In △ ABE and △ ACB { ∠ A is a common angle and m (∠ AED) = m (∠ B) }

∴ △ ADE ~ △ ACB $\quad$ ∴ $\frac{AD}{AC} = \frac{DE}{CB} = \frac{AE}{AB}$

∴ $\frac{3}{AC} = \frac{4.5}{9}$ $\quad$ ∴ $AC = \frac{3 \times 9}{4.5} = 6$ cm. $\quad$ ∴ EC = 6 – 4.5 = 1.5 cm.

2 In the opposite figure :



$\overline{AD}$ // $\overline{BC}$, AD = 4 cm. , AE = 3 cm. , DE = 2 cm. and BC = 8 cm.

1 Prove that : △ AED ~ △ CEB

2 Find : the perimeter of △ EBC

SOLUTION

∵ $\overline{AD}$ // $\overline{BC}$

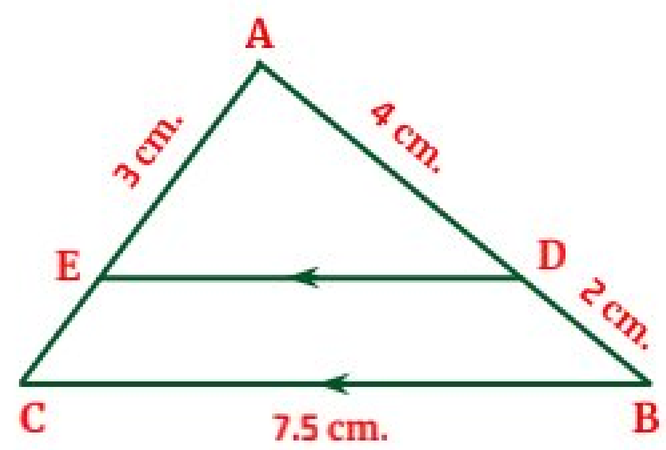
∴ m (∠ A) = m (∠ C) and m (∠ D) = m (∠ B) $\quad$ corresponding angles

∴ △ AED ~ △ CEB $\quad$ ∴ $\frac{AE}{CE} = \frac{DE}{EB} = \frac{AD}{CB}$

∴ $\frac{3}{AC} = \frac{2}{EB} = \frac{4}{8}$ $\quad$ ∴ $AC = \frac{3 \times 8}{4} = 6$ cm. and $EB = \frac{2 \times 8}{4} = 4$ cm.

∴ the perimeter of △ EBC = 8 + 6 + 4 = 18 cm.

3 In the opposite figure :



$\overline{DE}$ // $\overline{BC}$, AD = 4 cm. , AE = 3 cm. , BD = 2 cm. and BC = 7.5 cm.

1 Prove that : △ ADE ~ △ ABC

2 Find : the perimeter of △ ADE

SOLUTION

∵ $\overline{ED}$ // $\overline{BC}$

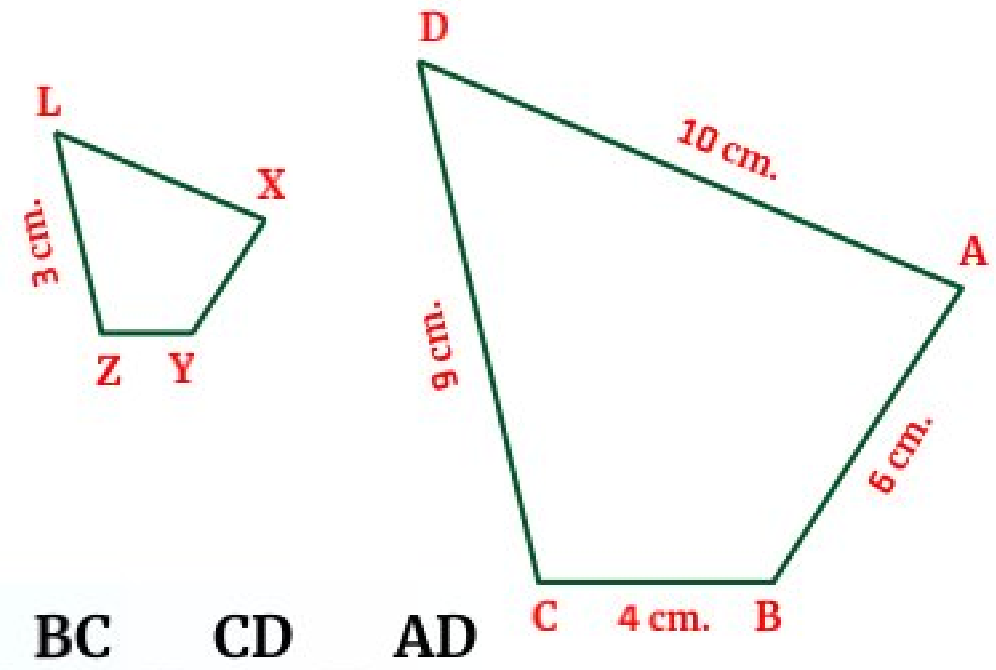
∴ m (∠ ADE) = m (∠ B) and m (∠ AED) = m (∠ C) $\quad$ corresponding angles

∴ △ ADE ~ △ ABC $\quad$ ∴ $\frac{AD}{AB} = \frac{DE}{BC} = \frac{AE}{AC}$

∴ $\frac{4}{6} = \frac{DE}{7.5} = \frac{3}{AC}$ $\quad$ ∴ $AC = \frac{3 \times 6}{4} = 4.5$ cm. and $ED = \frac{4 \times 7.5}{6} = 5$ cm.

∴ the perimeter of △ ADE = 3 + 4 + 5 = 12 cm.

4 **In the opposite figure :**



The polygon ABCD ~ The polygon XYZL , AB = 6 cm.

, BC = 4 cm. , CD = 9 cm. , DA = 10 cm. and ZL = 3 cm.

Find : the perimeter of △ The polygon XYZL

SOLUTION

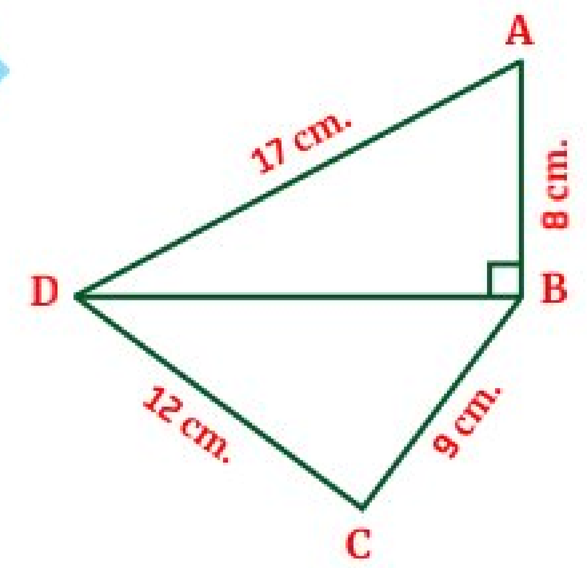
∴ The polygon ABCD ~ The polygon XYZL ∴ $\frac{AB}{XY} = \frac{BC}{YZ} = \frac{CD}{ZL} = \frac{AD}{XL}$

∴ $\frac{6}{XY} = \frac{4}{YZ} = \frac{9}{3} = \frac{10}{XL}$ ∴ $XY = \frac{3 \times 6}{9} = 2$ cm.

, $YZ = \frac{3 \times 4}{9} = 1\frac{1}{3}$ cm. , $XL = \frac{10 \times 3}{9} = 3\frac{1}{3}$ cm.

∴ the perimeter of △ The polygon XYZL = $3 + 2 + 1\frac{1}{3} + 1\frac{1}{3} = 7\frac{2}{3}$ cm.

5 **In the opposite figure :**



ABCD is a quadrilateral in which AB = 8 cm. , BC = 9 cm. and CD = 12 cm.

AD = 17 cm. and $\overline{BD} \perp \overline{AB}$

1 **Find :** the length of $\overline{BD}$

2 **Prove that :** m (∠ C) = 90°

SOLUTION

∴ The △ ABD is a right-angled triangle at B

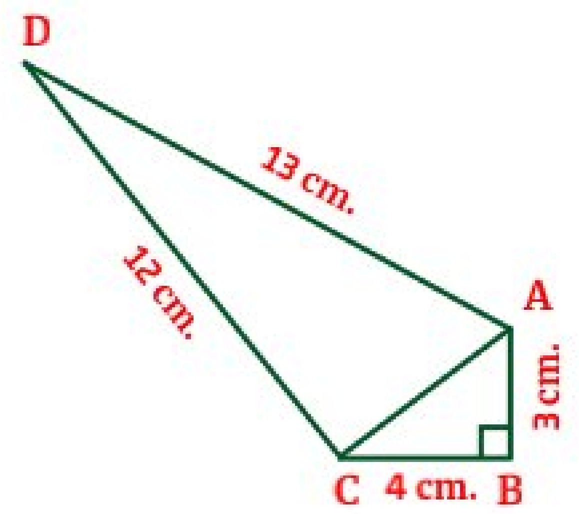
∴ $(BD)^2 = (AD)^2 - (AB)^2 = (17)^2 - (8)^2 = 289 - 64 = 225$ ∴ $BD = \sqrt{225} = 15$ cm.

In △ CBD

∵ $(BD)^2 = (15)^2 = 225$, $(CB)^2 + (CD)^2 = (9)^2 + (12)^2 = 81 + 144 = 225$

∴ $(BD)^2 = (CB)^2 + (CD)^2$ ∴ m (∠ C) = 90°

6 **In the opposite figure :**



BC = 4 cm. , AD = 13 cm. , AB = 3 cm.

, CD = 12 cm. and m (∠ B) = 90°

1 **Find :** the length of $\overline{AC}$

2 **Prove that :** m (∠ ACD) = 90°

SOLUTION

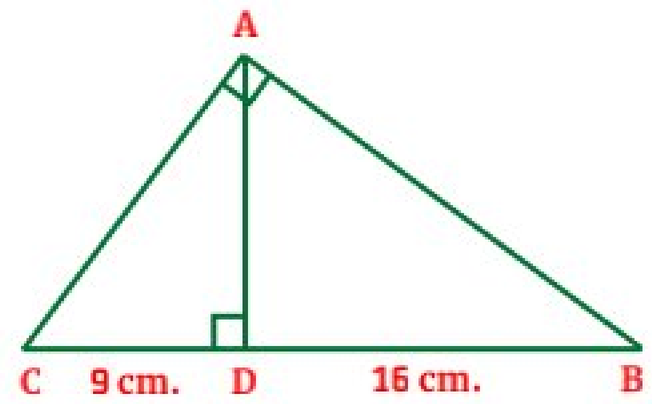
∵ The △ ABC is a right-angled triangle at B

∴ $(AC)^2 = (AB)^2 + (BC)^2 = (4)^2 + (3)^2 = 16 + 9 = 25$ ∴ $AC = \sqrt{25} = 5$ cm.

In △ ACD : $(AD)^2 = (13)^2 = 169$, $(CD)^2 + (AC)^2 = (12)^2 + (5)^2 = 144 + 25 = 169$

∴ $(BD)^2 = (CB)^2 + (CD)^2$ ∴ m (∠ ACD) = 90°

7 **In the opposite figure :**



ABC is a right–angled triangle at A , $\overline{AD} \perp \overline{BC}$, CD = 9 cm. , CD = 16 cm.

Find : the length of $\overline{AC}$, $\overline{AD}$ and $\overline{AB}$

SOLUTION

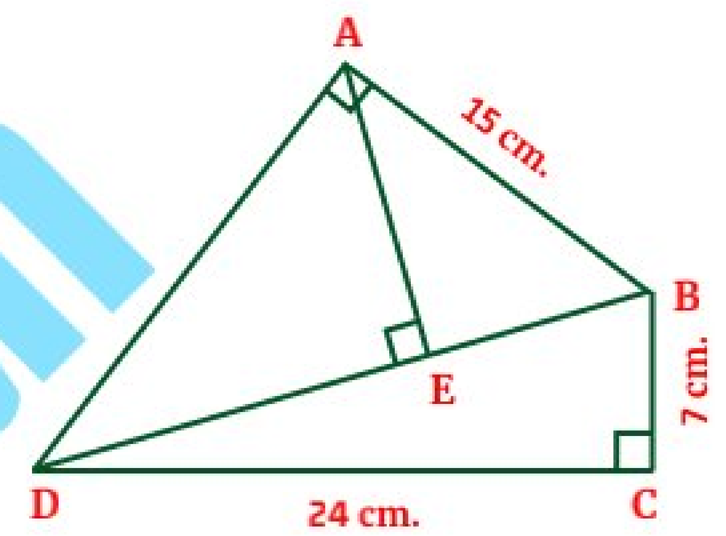
$\because$ The $\triangle$ ABC is a right–angled triangle at B , and $\overline{AD} \perp \overline{BC}$

$\therefore (AC)^2 = CD \times CB = 9 \times 25 = 225$ $\therefore AC = \sqrt{225} = 15$ cm.

$, (AD)^2 = CD \times DB = 9 \times 16 = 144$ $\therefore AC = \sqrt{144} = 12$ cm.

$, (AB)^2 = BD \times CB = 16 \times 25 = 400$ $\therefore AC = \sqrt{400} = 20$ cm.

8 **In the opposite figure :**



ABCD is a quadrilateral , where m ($\angle$ BCD) = m ($\angle$ BAD) = 90 °

$\overline{AE} \perp \overline{BD}$, BC = 7 cm. , CD = 24 cm. and AB = 15 cm. Find :

1. The length of $\overline{BD}$ and $\overline{AD}$
2. The length of the projection of $\overline{AB}$ on $\overleftrightarrow{BD}$

SOLUTION

$\because$ The $\triangle$ BCD is a right–angled triangle at C

$\therefore (BD)^2 = (BC)^2 + (CD)^2 = (7)^2 + (24)^2 = 49 + 576 = 625$ $\therefore AC = \sqrt{625} = 25$ cm.

$\because$ The $\triangle$ ABD is a right–angled triangle at A

$\therefore (AD)^2 = (BD)^2 - (AB)^2 = (25)^2 - (15)^2 = 625 - 225 = 400$ $\therefore AC = \sqrt{400} = 20$ cm.

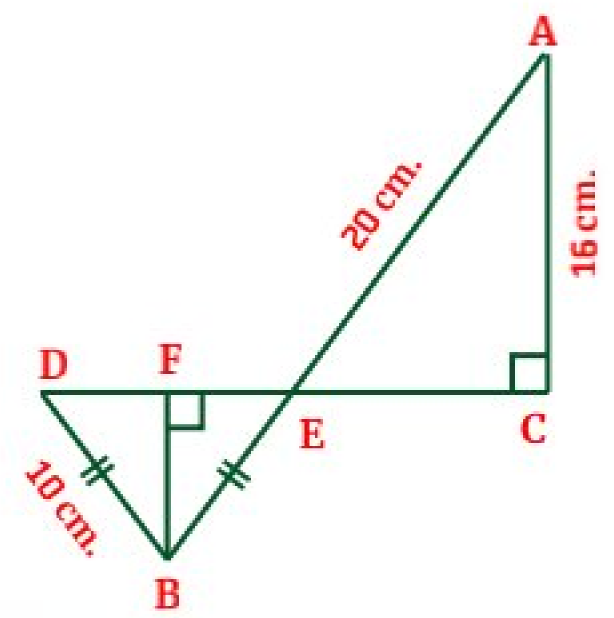
$\because \overline{AE} \perp \overline{BD}$ $\therefore$ the projection of A on $\overleftrightarrow{BD}$ is E

$\because B \in \overleftrightarrow{BD}$ $\therefore$ the projection of B on $\overleftrightarrow{BD}$ is B

$\therefore$ the projection of $\overline{AB}$ on $\overleftrightarrow{BD}$ is $\overline{EB}$

$\because (AB)^2 = BE \times BD$ $\therefore 225 = 25\,BE$ $\therefore BE = 225 \div 25 = 9$ cm.

9 **In the opposite figure :**



$\overline{AB} \cap \overline{CD} = \{E\}$, E is the midpoint of $\overline{CD}$, AC = 16 cm.

, AE = 20 cm. and BD = BE = 10 cm.

Find : The length of the projection of $\overline{AB}$ on $\overleftrightarrow{CD}$

SOLUTION

$\because$ AEC is a right–angled triangle at C.

$\therefore (EC)^2 = (AE)^2 - (AC)^2 = (20)^2 - (16)^2 = 400 - 256 = 144$ $\therefore EC = \sqrt{144} = 12$ cm.

$\because$ E is the midpoint of $\overline{CD}$ $\therefore EC = DE = 12$ cm.

In $\triangle$ BDE , BE = BD and $\overline{BE} \perp \overline{DE}$

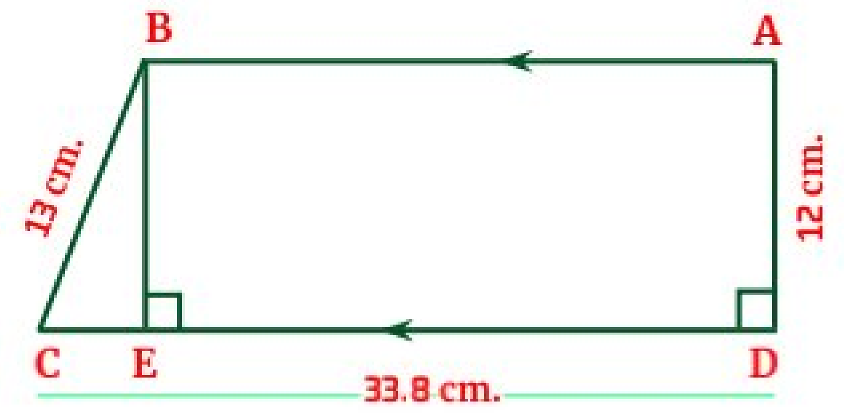
$\therefore$ F is the midpoint of $\overline{DE}$ $\therefore$ DF = FE = 6 cm.

$\because$ $\overline{AC} \perp \overline{CD}$ $\therefore$ the projection of A on $\overleftrightarrow{CD}$ is C

$\because$ $\overline{BF} \perp \overline{CD}$ $\therefore$ the projection of B on $\overleftrightarrow{CD}$ is F

$\therefore$ the projection of $\overline{AB}$ on $\overleftrightarrow{CD}$ is $\overline{FC}$ $\therefore$ FC = 6 + 12 = 18 cm.

10 **In the opposite figure :**



ABCD is a trapezium in which $\overline{AB}$ // $\overline{DC}$, $\overline{AD} \perp \overline{DC}$, AD = 12 cm.

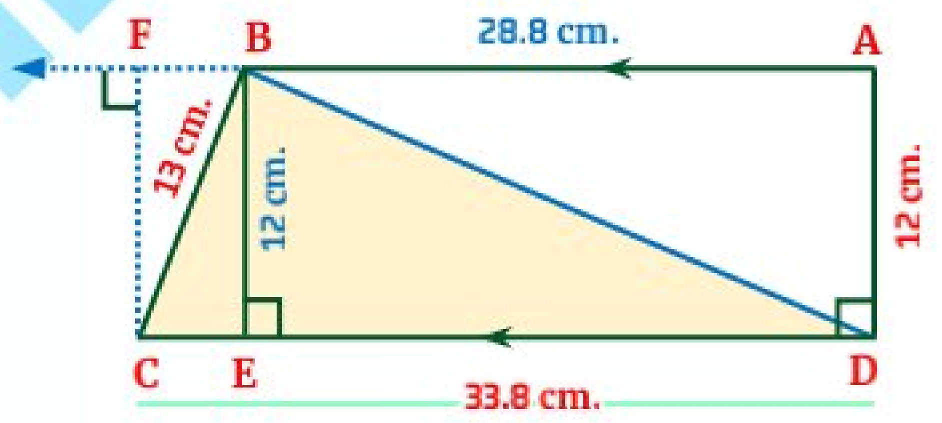
BC = 13 cm. , DC = 33.8 cm. , $\overline{BE}$ // $\overline{DC}$.

1. **Find :** The length of $\overline{CE}$, $\overline{AB}$ and $\overline{DB}$
2. **Find :** The length of the projection of $\overline{DC}$ on $\overleftrightarrow{AB}$
3. **Prove that :** m ($\angle$ DBC) = 90 °

SOLUTION

$\because$ $\overline{AB}$ // $\overline{DC}$, $\overline{AD} \perp \overline{DC}$ and $\overline{BE}$ // $\overline{DC}$ $\therefore$ the figure ABED is a rectangle

$\therefore$ AD = EB = 12 cm. and AB = ED



$\because$ BEC is a right–angled triangle at E.

$\therefore$ $(EC)^2 = 169 - 144 = 25$ $\therefore$ EC = $\sqrt{25}$ = 5 cm.

$\therefore$ AB = ED = 33.8 – 5 = 28.8 cm.

$\because$ ABD is a right–angled triangle at A.

$\therefore$ $(BD)^2 = (28.8)^2 + (12)^2 = 973.44$ $\therefore$ EC = $\sqrt{973.44}$ = 31.2 cm.

$\because$ $\overline{DA} \perp \overleftrightarrow{AB}$ $\therefore$ the projection of D on $\overleftrightarrow{CD}$ is A

$\because$ $\overline{CF} \perp \overleftrightarrow{AB}$ $\therefore$ the projection of C on $\overleftrightarrow{CD}$ is F

$\therefore$ the projection of $\overline{DC}$ on $\overleftrightarrow{AB}$ is $\overline{AF}$ $\therefore$ AF = CD = 33.8 cm.

In $\triangle$ CBD : $(CD)^2 = (33.8)^2 = 1142.44$, $(BD)^2 + (BC)^2 = 973.44 + 169 = 1142.44$

$\therefore$ $(CD)^2 = (BD)^2 + (BC)^2$ $\therefore$ m ($\angle$ DBC) = 90 °

11 $\triangle$ ABC where AB = 6 cm. , BC = 8 cm. , AC = 4 cm. , **determine** the type of the angle BAC.

SOLUTION

$\because$ $(BC)^2 = (8)^2 = 64$, $(AB)^2 + (AC)^2 = 36 + 16 = 52$ $\therefore$ $(BC)^2 > (AB)^2 + (AC)^2$

$\therefore$ $\angle$ BAC is an obtuse angle

12 **determine** the type of the angle C in $\triangle$ ABC in which AB = 7 cm. , BC = 3 cm. , AC = 5 cm.

SOLUTION

$\because$ $(AB)^2 = (7)^2 = 49$, $(BC)^2 + (AC)^2 = 9 + 25 = 34$ $\therefore$ $(AB)^2 > (BC)^2 + (AC)^2$

$\therefore$ $\angle$ BAC is an obtuse angle

13 **determine** the type of △ ABC according to its angles if AB = 3.5 cm. , BC = 2.5 cm. , AC = 3 cm.

SOLUTION

∵ $(AB)^2 = (3.5)^2 = 12.25$, $(BC)^2 + (AC)^2 = 6.25 + 9 = 15.25$ ∴ $(AB)^2 < (BC)^2 + (AC)^2$

∴ ∠ BAC is an acute-angled triangle.

14 △ ABC ~ △ EFD , AB = 4 cm. , BC = 5 cm. , AC = 6 cm. , If the perimeter of △ EFD = 60 cm.

Find : The length of sides of △ EFD.

SOLUTION

The perimeter of △ ABC = 5 + 6 + 4 = 15 cm.

∵ △ ABC ~ △ EFD ∴ $\frac{AB}{EF} = \frac{BC}{FD} = \frac{AC}{ED} = \frac{\text{Perimeter of } \triangle ABC}{\text{Perimeter of } \triangle EFD}$

∴ $\frac{4}{EF} = \frac{5}{FD} = \frac{6}{ED} = \frac{15}{60}$ ∴ $EF = \frac{4 \times 60}{15} = 16$ cm.

, $FD = \frac{5 \times 60}{15} = 20$ cm. and $ED = \frac{6 \times 60}{15} = 24$ cm.

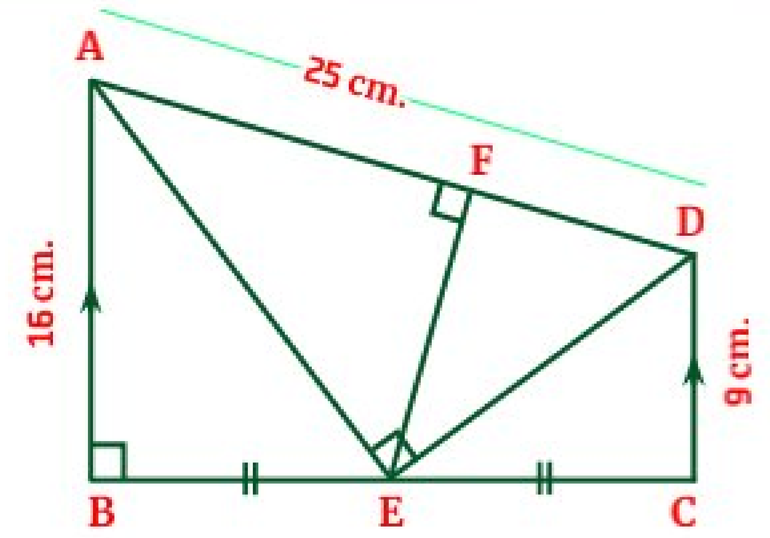
15 **In the opposite figure :**

ABCD is a trapezium in which $\overline{AB}$ // $\overline{DC}$, E is the midpoint of $\overline{BC}$

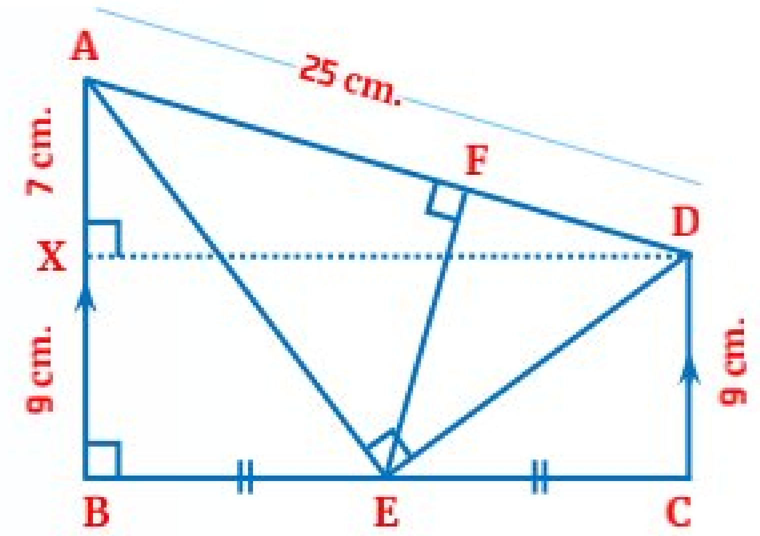
And m (∠ ABC) = 90° , AB = 16 cm. , AD = 25 cm. and DC = 9 cm.

$\overline{AE} \perp \overline{ED}$, $\overline{EF} \perp \overline{AD}$, **Find :**

1. The area of the trapezium ABCD
2. The length of $\overline{EF}$



SOLUTION



Draw $\overline{DX} \perp \overline{AB}$

∵ $\overline{XB}$ // $\overline{DC}$, $\overline{DX} \perp \overline{AB}$ and $\overline{CB} \perp \overline{AB}$

∴ the figure XDCB is a rectangle

∴ DC = XB = 9 cm. and XD = BC , AX = 16 – 7 = 9 cm.

∵ AXD is a right-angled triangle at X.

∴ $(XD)^2 = (AD)^2 - (AX)^2 = 625 - 49 = 576$ ∴ $XD = \sqrt{576} = 24$ cm.

∴ XD = BC = 24 cm. ∴ the area = $\frac{1}{2}(16 + 9) \times 24 = 300$ cm².

∵ ABE is a right-angled triangle at B.

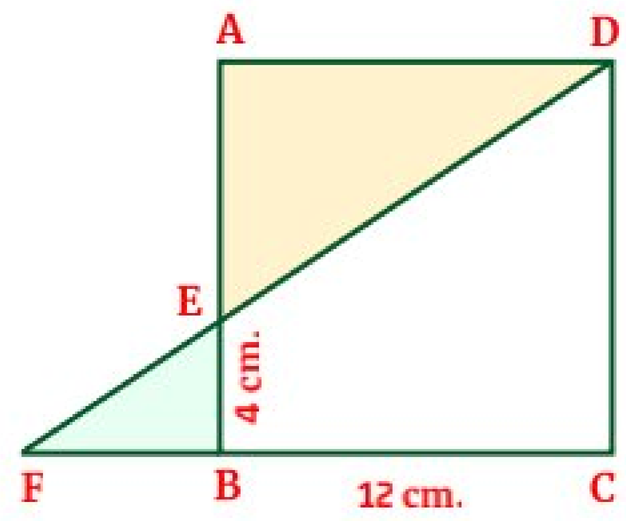
∴ $(AE)^2 = (AB)^2 + (BE)^2 = 256 + 144 = 400$ ∴ $AE = \sqrt{400} = 20$ cm.

∵ DEC is a right-angled triangle at C.

∴ $(DE)^2 = (DC)^2 + (CE)^2 = 81 + 144 = 225$ ∴ $DE = \sqrt{225} = 15$ cm.

∴ $EF = \frac{AE \times ED}{AD} = \frac{15 \times 20}{25} = 12$ cm.

16 **In the opposite figure :**



ABCD is a square of side length 12 cm. , $B \in \overrightarrow{CB}$

where $\overline{AB} \cap \overline{DF} = \{E\}$ and EB = 4 cm.

1. **Prove that :** $\triangle$ ADE $\sim$ $\triangle$ BFE
2. **Find :** The length of $\overline{FB}$

SOLUTION

$\because$ ABCD is a square $\therefore$ AB = BC = 12 cm. , m ($\angle$ B) = m ($\angle$ C) = 90°

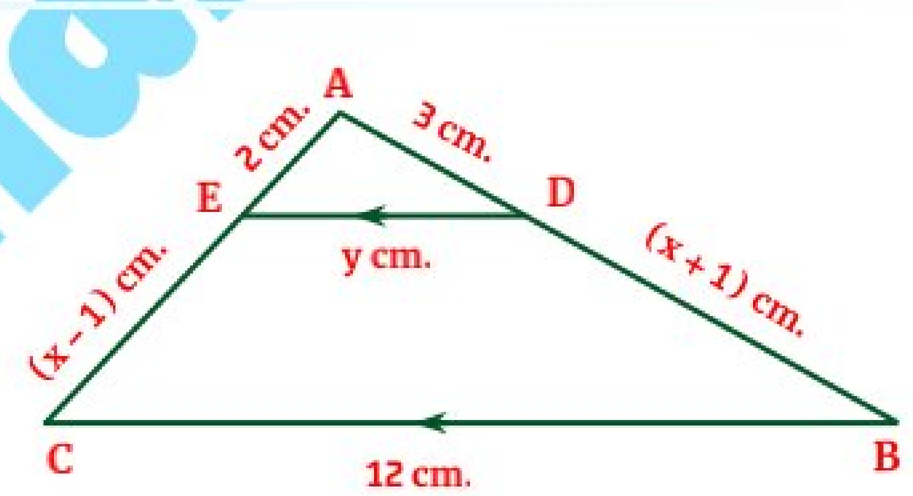
$\therefore$ AE = 12 – 4 = 8 cm.

In $\triangle\triangle$ ADE and BFE { m ($\angle$ B) = m ($\angle$ C) = 90° and m ($\angle$ AED) = m ($\angle$ FEB) (V.O.A) }

$\therefore \triangle ADE \sim \triangle BFE$ $\therefore \frac{AD}{BF} = \frac{DE}{FE} = \frac{AE}{BE}$

$\therefore \frac{12}{BF} = \frac{8}{4}$ $\therefore BF = \frac{4 \times 12}{8} = 6$ cm.

17 **In the opposite figure :**



ABC is a triangle in which : $D \in \overline{AB}$ and $E \in \overline{AC}$ such that :

$\overline{DE} // \overline{BC}$, AD = 3 cm. , AE = 2 cm. , BC = 12 cm. , DE = y cm.

BD = (x + 1) cm. and EC = (x – 1) cm.

And m ($\angle$ ABC) = 90° , AB = 16 cm. , AD = 25 cm. and DC = 9 cm.

$\overline{AE} \perp \overline{ED}$, $\overline{EF} \perp \overline{AD}$, **Find :** The length of $\overline{AB}$, $\overline{EC}$ and $\overline{DE}$

SOLUTION

AC = 2 + x – 1 = (x + 1) cm. and AB = x + 1 + 3 = (x + 4) cm.

$\therefore$ m ($\angle$ ADE) = m ($\angle$ B) and m ($\angle$ AED) = m ($\angle$ C) corresponding angles

$\therefore \triangle ADE \sim \triangle ABC$ $\therefore \frac{AD}{AB} = \frac{DE}{BC} = \frac{AE}{AC}$

$\therefore \frac{3}{x+4} = \frac{y}{12} = \frac{2}{x+1}$ $\therefore \frac{3}{x+4} = \frac{2}{x+1}$ $\therefore 3x + 3 = 2x + 8$

$\therefore$ x = 8 – 3 = 5 cm.

, $\frac{3}{9} = \frac{y}{12}$ $\therefore y = \frac{3 \times 12}{9} = 4$ cm.

$\therefore$ AC = 5 + 1 = 6 cm , AB = 5 + 4 = 9 cm. , and DE = 4 cm.

Best wishes, Mr. Abdelrahman Essam

كيفية طباعة صفحات معينة من ملف معين

مثلا ازاى نطبع الصفحات من صفحة 4 الى صفحة 9

